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A RECOMMENDATION

The following paragraph, which speaks for itself, is taken from "An Outpost in Papua," by Arthur Kent Chignell, Priest of the New Guinea Mission —

"Rummaging in the Sydney book-shops ... I discovered and bought for ninepence, a secondhand copy of a little book that had been issued only two years before 'THE MAINTENANCE OF HEALTH IN THE TROPICS' written by W J Simpson, M.D and published under the auspices of the London School of Tropical Medicine by John Bale Sons and Danielsson of Great Titchfield Street in London. I give the details fully not only because that book was the very best ninepenny-worth I ever bought, but because a copy should come to New Guinea with everyone who enters the country More than that and because a book is but a lifeless thing until it is read and understood, it would be very well if every volunteer for the New Guinea Mission could be examined as to its contents before he is accepted and catechized as to his willingness to live up to its teaching before he is allowed to sail."

A new edition of the above-mentioned book, thoroughly revised and brought up to date, has recently been published, Price 3s. 6d. net, post free 3s 10d., and can be obtained from the Publishers

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Singer & Co., Ltd—Singer 10 h.p. Doctor's Car 8

CHEMISTS & DRUGGISTS:—
Allen & Hanburys—
Bynin Amara 23
Bynogen .. 25
Hyposol Salvarsan &c 24
Anglo-American Pharmaceutical Co. Ltd.—
Betul-Ol Col[illegible] Sal 1
Peptenzyme 40
Pancrobilin 4
Anglo-French Drug Co.—
Ambrine Kine[illegible] 32
Opolaxyl Uraseptine Kalyl &c 1
Iodorenol Cover II
Battley & Watts—
Liquor Opii Sedativus 11
Boots Pure Drug Co—
Oil Solution of Dichloramine-T 18
Bristol Myers Co.—Sal Hepatica 41
British Oxygen Co.—Oxygen 42
Burroughs Wellcome & Co—
Infundin [illegible]
Kepler Cod Liver Oil with Malt Extract 9
Christy & Co—
Glyco-Thymoline 13
Glyco-Heroin 4
Cook & Co—
Cofectant [illegible] Cover II

CHEMISTS—(Continued)
Crookes' Laboratories Collosols 22
Fairchild Bros & Foster—Pepsencia 28
Fellows Medical Manfg Co—Fellows Syrup 10
Ferber Ltd.—Blenosan Capsules 45
Fletcher Fletcher & Co—Vibrona 24
Gale & Co.—Succonum Entrapuro Syrup Glycerophosphatum 41
Genatosan Ltd—Formamint, Cystopurin &c 41
Heppells—Urodonal 17
Hewlett & Son—Mist Hepatica Conc. 43
Lambert Pharmacal Co.—Listerine 9
Macfarlan & Co—Pure Chloroform 40
Maltine Manufacturing Co.—Maltine with Iron 27
Martindale—Emetine Bismuth Iodide 13
May & Baker—Novarsenobillon 15
Moore & Co—*Lymm Pure Salt* 54
Newbery & Sons—Pulvis Jacobi Ver 43
New York Pharmaceutical Co—Hayden's Viburnum Compound Cover III
Parke, Davis & Co—Cocillana Compound Syrup & 19
Haines & Co—[illegible] Suppositories 45
Richards & Sons—Antikamnia Tablets 1
S J Charm? Co—Sulphaqua 40
Squire & Sons—Kaolin [illegible] Senrine 21
Wilcox, Jozeau & Co—Arheol 43
Willows Francis Butler & Thompson—[illegible] 1
Zimmermann & Co—Sabitol 14

DISINFECTANTS—
Condy's Fluid 45

FOODS—
Benger's Food 15
Bishop—Bovinine 11
Blatchley's Diabetic Preparation Cover III
Brand & Co—Meat Juice 44
Callard & Co.—Diabetic Food 44
Carnrick & Co.—Liquid Peptonoid Dry Peptonoid 27
Freeman Real Turtle Extract 45
Fry's Malted Cocoa Cover III
Maconochie's Potted Meats and Fish Pastes 44
Southall Bros & Barclay—Vitafer 15
Thew Hooker & Gilbey Ltd—Malted Milk 44
Valentine's Meat-Juice Cover IV
Van Abbott & Sons—Gluten Bread &c. 42
Vi-Cocoa 45
Vitamogen Ltd.—Vitamogen 35
Wander Ltd.—Ovaltine 22

FURNITURE, &c.:—
Carters—Furniture for Invalids and Hospital Supplies 31
Wolfe & Hollander—Wolfhol Restful Chair 4

HOSIERS &c.—
Wolsey Underwear 31

MED & SURG APPLIANCES:—
Bailey & Son—Surgical Instruments 31
Davis—Lukens Sterile Catgut 45
Davis & Geck—Kalmerid Catgut 6
Down Bros—Bale and Fuller [illegible] Apparatus 33
[illegible] 6
Millikin & Lawley—[illegible] &c. 8
Norwich Crape Co—Norwich Crêpe Bandage
Robinson & Sons—Gamgee Tissue 45
[illegible]—Dr Albee [illegible] 45
Thermo [illegible] Bureau—Curative Wadding
Timpson & Co—Ligatures
Zeal—Clinical Thermometer 4

MINERAL WATERS, &c—
Contrexéville Pavilion
Davis & Davis—Natural Mineral Waters
Hogg & Son—Aerated Lime-Water

OPTICIANS:
Watson & Son Ltd.—Hæmacytometers

SANITARY APPLIANCES,
Dodman & Co., Ltd—Hospital Incinerators

STOVES, &c:—
British Commercial Gas Association—Gas fire

TAILORS BOOTMAKERS
Burberrys—The Burberry
Harry Hall—Service Dress

VACCINE LYMPH:—
Chaumier's Calf Lymph

X RAY &c., APPARATUS
British Thomson Houston Co—Coolidge X Ray Tube
Medical Supply Association—[illegible] Improved [illegible] Apparatus
Siemens Brothers & Co—[illegible]
Watson & Son—[illegible] X Ray Pla

MISCELLANEOUS—
[illegible] Gloves Penal &
[illegible]
[illegible]—Chauffeur
[illegible]—Companion Help

THE
Horace Dobell Lecture
ON THE
MECHANISM OF THE SERUM REACTIONS

Delivered before the Royal College of Physicians of London on Nov 7th 1916

By H R DEAN, M D Oxon, F R C P Lond,
PROFESSOR OF PATHOLOGY UNIVERSITY OF MANCHESTER.

MR. PRESIDENT AND GENTLEMEN,—The serum reactions are those which take place between an antigen and its homologous antiserum Of the chemical nature of antigens we have no certain knowledge Examples are bacteria and their products red cells and blood serum when injected into an animal of different species Substances capable of acting as antigens appear to be attached to protein matter and have not as yet been isolated in a pure state Attempts have been made to show that antigens are of a lipoid nature Antigen-containing substances have been extracted with alcohol and ether, and the material obtained after evaporation of the solvent has been injected into animals (Bang and Forssman, 1906, and others) The results obtained have not been conclusive (Ritchie and Miller, 1913) In this connexion it must be remembered that antigens are active in very small amounts, and that an ethereal solution of lipoids, although apparently perfectly clear, may well contain minute fragments of protein matter in suspension Moreover, substances not usually soluble in fat solvents may be dissolved or taken up as a very fine suspension in the presence of lecithin. A chloroform solution of lecithin is able to take up or dissolve such substances as cobra venom, trypsin rennet and even oxide of iron In no case so far as I am aware, has the injection of a pure substance of well defined chemical constitution been followed by the formation of antibodies Our definition of antigen is a substance the introduction of which into the animal body is followed by the formation of a specific antibody

It is usually held (Pick, 1902) that the antibodies are for the greater part precipitated with the globulins of the serum, with the pseudoglobulin fraction in the case of the horse, with the euglobulin fraction in the case of the goat Moreover an increase in the globulins of the serum during the process of immunisation has, on several occasions, been observed It is however, probable that euglobulin and pseudoglobulin merely represent different phases of physical aggregation of their constituent particles, and the difference between even albumin and globulin may be of a physical rather than chemical nature From this point of view the fact that the greater part of the antibody in a serum is precipitated with any particular fraction of globulin yields no information as to the chemical nature of the actual antibody As a matter of fact it was shown by Ledingham (1907) that the ratio of distribution of antitoxin among the various serum proteins—euglobulin pseudoglobulin and albumin—differed considerably at different stages of the process of immunisation We may suppose that the process of immunisation is accompanied by a disturbance of the physical state of the serum proteins and the regrouping of protein molecules may lead to an increase in the globulin fraction

As to the chemical nature of antigen and antibody we are in complete ignorance When however antigen is mixed with antibody a reaction takes place and the occurrence of this reaction can be shown by certain phenomena known as the serum reactions. These reactions are 1 *The precipitation reaction.* When a normal serum or a bacterial extract is mixed with its homologous antiserum a precipitate is formed 2. *The agglutination reaction* When a suspension of red blood corpuscles or bacteria is mixed with homologous antiserum the bacteria or cells are agglutinated to form clumps 3 *Lysis* When red corpuscles or bacteria are mixed with antiserum or complement the cells are dissolved, or at any rate some change takes place which leads to the escape of the intracellular contents 4 *Complement fixation* When antigen is mixed with antiserum and complement, the complement is used up and if subsequently there be added a mixture of red blood corpuscles and homologous antiserum the fixation of the complement can be demonstrated by the absence of hæmolysis 5 *The opsonic reaction* If red cells or bacteria are treated with antiserum the cells or bacteria are so altered that they are more readily ingested by phagocytes This reaction is more marked in the presence of complement

THEORIES IN EXPLANATION OF THE SERUM REACTIONS

Two main theories have been advanced to explain these reactions the theory of Ehrlich and the theory of Bordet The former theory assumes a chemical union between the antigen and the antibody, the other interprets the reactions as adsorption phenomena in which the antibody is adsorbed by the antigen In spite of some opposition the theory of Ehrlich has acquired a dominant position in medical literature, and its general outline is familiar to all who have even the scantiest knowledge of medical sciences

According to the views of the Ehrlich school each of the serum reactions is due to the existence of a separate and particular antibody These various and hypothetical antibodies have been arranged in three classes *Receptors of the first order* To this class belong the antitoxins, which possess a haptophore group, a grouping of atoms capable of satisfying the affinities of the corresponding grouping in the haptophore molecule of the homologous toxin The toxin molecule is thus rendered harmless for it is no longer able to combine with the cells of the body *Receptors of the second order* These have in addition to the haptophore group, a second group, the ergophore group, which by virtue of its chemical constitution is able to bring about the change peculiar to the particular type of antibody To this class belong the precipitins and agglutinins The haptophore group of the agglutinin combines with the bacterium, and subsequently the ergophore group proceeds to produce agglutination *Receptors of the third order* In addition to the haptophore group the antibodies possess a complementophile group, which combines with a substance called complement which is necessary to complete the lysis of a corpuscle or bacterium The antibodies concerned in the complement-fixation reaction are held by many to constitute a separate class of amboceptor and the opsonins or bacteriotropins are also considered to belong to this group

It is assumed, then that each serum reaction is an entirely separate and distinct phenomenon the result of the action of a highly specialised chemical substance expressly manufactured for the purpose A precipitin is a body which combines with homologous antigen, and then by virtue of a special chemical formula proceeds to precipitate it It is entirely distinct from the complement binding amboceptor which is structurally adapted to perform the specific function of complement fixation It is manifest that the side chain theory affords no explanation whatever of the mechanism of the serum reactions It may as a matter of mere terminology, be convenient to say that any serum contains an agglutinin for *B typhosus* but the process of agglutination is in no way explained by saying that the agglutinin possesses two groups the one a haptophore which combines with the bacillus the other an ergophore which produces agglutination We already know that clumping occurs and that the reaction is specific Ignorance, however aptly veiled in an attractive terminology remains ignorance

With each addition to the store of experimental fact new substances have been imagined and endowed with the appropriate functions To difficulties in the interpretation of the reaction between toxin and antitoxin we owe the coining of such words as prototoxoid syntoxoid and epitoxoid The observation that bacteriolysis does not occur in the presence of a great relative excess of antiserum led Neisser and Wechsberg (1901) to elaborate the hypothetical conception of complement deviation[1] (*Komplement Ablenkung*). The experimental facts are explained in this case by supposing that free amboceptors have a greater affinity for complement than those which have effected union with the receptors of the bacillus Ferrata (1907) showed by precipitating the euglobulin of fresh serum that two substances appeared to be necessary for complement action The names mid piece and end piece fraction of the complement were accordingly coined, and the diagrams which accompany Brand's article (1907) are examples of the attempt to make new experimental data conform to the limits of a ruling hypothesis

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[1] Complement deviation (*Ablenkung*) should not be confused with the more familiar complement fixation (*Bindung*)

A theory, right or wrong, is of value as long as it tends to progress and further investigation, and it is notorious that the researches of Ehrlich and his school have yielded results of high theoretical interest and great practical value, in the realms alike of diagnosis and therapeutics Nevertheless, the outstanding genius of Ehrlich and the greatness of his discoveries have tended to give to the theory associated with his name a position comparable to that of a well known law of physical or biological science New observations have been held to be explained if they were shown to be consistent with the side chain hypothesis But agglutinins, precipitins, amboceptors are mere words, and a passive belief in the existence of such bodies tends to impede rather than advance our understanding of what is actually taking place In our present state of ignorance of the nature of the reaction it seems undesirable to use a terminology which implies a knowledge which we do not possess

We know that when substances containing antigens are mixed with substances containing antibodies a change takes place, and we can obtain indirect evidence of this change by observing certain phenomena such as precipitation, agglutination, or lysis It seems to me probable that these phenomena are the result of one fundamental reaction which takes place between antigen and antibody The so called serum reactions, precipitation, agglutination, lysis, complement fixation, and the opsonic reaction constitute different methods for the indirect observation of one reaction which underlies and is essential to them all[1] They are in fact, accessory phenomena, and their demonstration is dependent on accessory characteristics in the reagents which we employ For all the reactions which can be demonstrated in a test tube it is only necessary to postulate one kind of antibody

PRECIPITATION

This is a reaction which is usually demonstrated by mixing antiserum with an antigen containing fluid According to the side chain hypothesis the antiserum contains an active substance the precipitin which precipitates the antigen, called in this reaction the precipitinogen That any person who had carried out many precipitation reactions should continue to hold this view is not a little surprising In practice relatively large amounts of antiserum are invariably employed, while the antigen containing serum may be employed in quantities of 0 0001 c c, 0 00001 c c., or in exceptional cases still smaller amounts That a fairly abundant and easily visible precipitate could be derived from such a minute quantity of antigen is scarcely conceivable It is to Welsh and Chapman (1908 to 1910) that we owe a most important observation on this subject These workers showed by gravimetric methods that, under the usual experimental conditions, the greater part, if not all of the precipitate was derived from the antiserum Table I, abbreviated from a paper in the Proceedings of the Royal Society (1907) by Welsh and Chapman, illustrates this point

TABLE I

No of experiment	Weight of egg white homologous protein (dried)	Amount of antiserum (fresh)	Weight of precipitum (dried)
1	2 5 mg	19 c.c	18·0 mg
2	2 5 mg	20 c.c	18·0 mg
5 (a)	1·0 mg	18 c.c.	13 0 mg
5 (b)	Superfluid of 5 (a)	16 c.c.	8 5 mg
5 (c)	5 (b)	18 c.c	4 4 mg

In experiment (1) 2 5 mg dried hen egg white interacted once with 19 c c fresh hen egg antiserum and caused the formation of a deposit weighing 18 mg, or more than seven times the weight of the homologous protein concerned In experiment (5) 1 mg of dried hen egg white interacting (a) with 18 c c fresh hen egg antiserum, brought down a deposit of 13 mg The residual protein in the clear superfluid interacting (b) with 16 c c of a second fresh hen egg antiserum gave a further deposit of 8 5 mg The resulting superfluid, again interacting (c) with 18 c c of a third egg antiserum gave a third deposit of 4 4 mg Thus by allowing 1 mg of the homologous protein to interact successively with three antisera (which did not mutually interact) a total deposit of 25·9 mg was obtained

On the other hand, the weight of the precipitate is directly proportional to the amount of antiserum provided that the mixture contains sufficient antigen to precipitate all the precipitable matter in the antiserum This second point is illustrated in Table II taken from Chapman's paper in the Proceedings of the Royal Society (1910)

TABLE II

Weight of dried egg white.	Volume of antiserum	Weight of precipitate	Weight of precipitate from 1 c c antiserum
14 4 mg	2 c c	3·2 mg	1·6 mg
36 0 mg	2 c c	3 5 mg	1 75 mg
144·0 mg	2 c.c.	3 4 mg	1 7 mg
432·0 mg	2 c.c	3 4 mg	1 7 mg

If, however, the mixture contains an insufficient quantity of antigen precipitation is incomplete and a smaller precipitate is obtained The proof given by Welsh and Chapman that under the usual experimental conditions it is the antiserum which is precipitated by the antigen is of far reaching importance It casts an entirely fresh light not merely on the precipitation reaction, but on the other serum reactions as well

Before leaving the subject of precipitation it is necessary to refer to the importance of the relative proportions of antigen and antiserum in the mixture The importance of this factor is shown in Table III (Dean, 1911) —

TABLE III

—	5 c c dilutions of normal horse serum (antigen)	5 c c of a 1 in 5 dilution of rabbit v horse serum (antibody)	5 c c of a 1 in 10 dilution of rabbit v horse serum	5 c c normal saline solution.
1	Undiluted serum	70 c mm	5 c mm	Clear
2	Diluted 1 in 2	140	30	
3	1 in 4	190	65	
4	" 1 in 8	200	80	
5	1 in 16	110	120	
6	1 in 32	61	60	
7	1 in 64	40	25	
8	1 in 128	30	15	
9	1 in 256	20	7 5	
10	1 in 512	10	5	
11	1 in 1024	7 5	Less than 5	—
12	5 c c. normal saline solution	Clear	Clear	

Three sets of dilutions of horse serum were prepared To one set was added an equal quantity of a 1 in 5 dilution of antiserum, to another set was added a 1 in 10 dilution of the antiserum The third set received an equal quantity of normal saline solution and acted as an antigen control The antiserum controls are shown in the tubes numbered 12 All the tubes were incubated for four hours at 37° C, and then placed overnight in the cold room The tubes were then centrifugalised for one hour The tubes ended in a narrow portion, which was calibrated in such a way that the amount of the precipitate could be accurately determined The relative quantities of the precipitate in each tube are indicated by the figures which give the volume of the precipitate in cubic millimetres

With a 1 in 5 dilution of antiserum the largest precipitate was obtained by adding a 1 in 8 dilution of antigen With half the quantity of antiserum (1 in 10) the largest precipitate was obtained by adding a 1 in 16 dilution of antigen The largest precipitate obtained with the 1 in 10 dilution of antiserum was about half the largest amount obtained by the use of twice as much antiserum (1 in 5 dilution) For any quantity of antiserum there exists a quantity of antigen which is capable within a definite period of time of producing the largest precipitate obtainable from such a quantity of antiserum Table III also illustrates very clearly the inhibitory effect of relative excess of antigen This is plainly seen by comparing the figures in the two columns A 1 in 4 antigen dilution, which constituted a marked antigen excess for an equal quantity of 1 in 10 antiserum produced almost the largest precipitate of the series when mixed with a 1 in 5 dilution of antiserum

The relative proportions of antigen and antibody constitute a factor which is present in all the serum reactions This influence of relative proportions suggests an analogy with the precipitate which is formed when an electro-positive is mixed with an electro negative colloid In this case if the proportions are optimal both colloids are completely precipitated If either constituent is present in relative excess precipitation is incomplete Moreschi (1905) concluded as the result of a series of experiments that precipitin and precipitinogen unite in variable proportion to form a series of precipitates. This result is at variance with the conclusions of Welsh and Chapman. The matter is one which merits further investigation.

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[1] The reaction which takes place between toxin and antitoxin is not accompanied by any change which can be demonstrated in vitro and appears to be of a somewhat different nature to that which takes place in the serum reactions which are here considered

If, then, antigen is mixed with antibody there follows an aggregation of particles with the formation in all probability of an adsorption compound. This aggregation is an essential part of the mechanism of all the serum reactions, not merely of the precipitin reaction but also of agglutination, lysis, complement fixation, and in all probability the opsonic reaction. If sufficient antiserum is used, and if the proportions of antigen and antibody are correctly adjusted, there is formed a bulky and flocculent precipitate. If the mixture contains a relative excess of either antigen or antibody the aggregation process is less complete. Here it may be mentioned that the ordinary method of performing the test in which a few cubic centimetres of the mixture are placed in an ordinary test-tube is not an ideal method of observing a finely divided precipitate. A mixture of antigen and antiserum which looks as clear as water in an ordinary test-tube may appear opalescent or even turbid if viewed through the length of a polarimeter tube.

THE RELATION BETWEEN THE FORMATION OF A PRECIPITATE AND THE FIXATION OF COMPLEMENT

Complement fixation, which since the introduction of the Wassermann reaction has become comparatively familiar, was first observed by Bordet and Gengou in 1901. Interest in the subject was revived by Neisser and Sachs (1905), who elaborated a practical method for the identification of the blood of different kinds of animals. As to the explanation of the phenomenon considerable controversy has taken place. Gay (1905) came to the conclusion that the formation of a precipitate was the essential cause of the disappearance of complement. Neisser and Sachs, on the other hand, found that the amount of the precipitate and the amount of complement fixed stood in no direct proportions. They were able to observe marked fixation of complement in mixtures in which no precipitate could be recognised. They considered that the complement united with the complementophile group of an amboceptor in strict accordance with the theories of Ehrlich. The view was accordingly propounded that precipitation and complement fixation were separate and independent phenomena. Muir and Martin (1906) found that the fixation of complement was, as a rule, closely associated with the formation of a precipitate, but were not convinced that precipitation formed a complete explanation of complement fixation. They cited as an instance a rabbit v guinea pig serum which produced when mixed with its homologous antigen, a faint cloudiness but no definite precipitate. The capacity for fixing complement, however was possessed by this serum to a very high degree. In other experiments they found that if the antigen was greatly diluted no precipitate was formed, but nevertheless the mixture was able to bind complement efficiently.

The case for the separate identity of precipitins and complement-binding antibodies rests on the following evidence. 1. Certain mixtures of antigen and antiserum in which a definite precipitate formed were shown to have little or no power to fix complement. 2. Mixtures containing very small quantities of either antigen or antiserum may appear perfectly clear and yet be shown to be very efficient for complement fixation. 3. Certain antisera give excellent results in complement-fixation experiments but yield very small precipitates. 4. If during the process of immunisation, daily samples of serum are examined complement fixation can as a rule be demonstrated at an earlier stage than precipitation. 5. If either the antiserum or the normal serum (antigen) be heated the capacity for forming a precipitate may be lost, while the capacity for fixing complement may be retained. Bacterial extract kept for a time loses its power of forming a precipitate with homologous antiserum but is still useful for the complement fixation test. But as will be seen from the following experiments these difficulties can be explained without postulating the existence of two different kinds of antibody.

If a series of mixtures are prepared by adding various quantities of antigen to a constant quantity of a good antiserum it is possible to compare the amount and state of division of the precipitate with the amount of complement fixed (Dean 1911).

Scheme to Illustrate the Diagrams used in the Tables

No hæmolysis	□
Trace ,,	◲
Slight ,	▗
Half hæmolysed	◨
Marked hæmolysis	▟
Almost complete hæmolysis	◘
Complete ,	■

TABLE IV

Dilutions of normal goat serum (antigen)	(A) 1 in 10 dilution of rabbit v goat serum (antibody) amount of precipitate formed	1 in 10 dilution of rabbit v goat serum (antibody)		
		(B) 0·05 c.c guinea pig complement	(C) 0 1 c c guinea pig complement	(D) 0 2 c c guinea pig complement
(1) 1 in 10	90 c mm	■	■	■
(2) 1 in 20	60 ,,	■	■	■
(3) 1 in 40	40	□	◲	■
(4) 1 in 80	45 ,	□	□	◘
(5) 1 in 160	40 ,,	□	□	▟
(6) 1 in 320	30	□	□	◲
(7) 1 in 640	10	□	□	▟
(8) 1 in 1280	5 ,	□	◲	■
(9) 1 in 2560	Large trace	◲	■	■
(10) 1 in 5120	Trace	◘	■	■
(11) 1 in 10240	Nil	■	■	■

Column A represents the results of the precipitation experiment. The tubes 1 to 11 in column A contained a bulk of 10 c c, made up of 5 c c of the diluted goat serum (antigen) and 5 c c of a 1 in 10 dilution of rabbit v goat serum (antibody). The lower portion of each of these tubes was narrow and calibrated. The tubes were incubated for 4 hours at 37° C, and the progress of the precipitation was observed and recorded at regular intervals. Immediately after mixing turbidity appeared in tubes 2 and 3. At the expiration of 10 minutes flocculi were apparent in tubes 2 and 3 and tubes 1, 4, and 5 showed uniform turbidity. After half an hour large flocculi which had formed in tubes 2, 3, and 4, had fallen to the bottom of the tubes and left a clear supernatant fluid. Flocculi had formed in tube 1, but had separated less completely. Small particles were visible in tube 5 and just visible in tube 6. In tubes 7 and 8 turbidity was present without visible particles. After one hour the first 6 tubes showed a deposit and a clear supernatant fluid. Tube 7 showed small particles suspended uniformly throughout its contents. In tubes 8, 9, and 10 a progressively diminishing opalescence was seen. After four hours all the tubes were centrifugalised and the actual amount of the deposited precipitate was read. The figures are recorded in column A.

The columns B, C and D record the results obtained in a parallel complement fixation experiment. To obtain a quantitative estimate of the amount of complement fixed 3 doses of guinea pig serum were employed for each of the 11 mixtures of antigen and antibody.

It is evident from a consideration of Table IV that the proportions of antigen and antibody which produce the largest quantity of precipitate are not those which effect the greatest fixation of complement. Similar results were obtained by mixing a variety of antigens with the homologous antisera. When antigen and antibody are mixed in the proportions most favourable to precipitation the aggregation process takes place energetically and large flocculi are rapidly separated. But if the mixture contains a relatively smaller amount of antigen precipitation is slower and less complete. These are the conditions favourable to

TABLE V

Precipitation Experiment

3 c.c extract of *B typhosus* diluted	+ 3 c c. antityphoid serum (rabbit) diluted 1 in 20		+ 3 c c saline solution + 3 c.c guinea pig serum diluted 1 in 5
	+ 3 c c of fresh guinea pig serum diluted 1 in 5	+ 3 c.c. of saline solution	
(1) 1 in 10	Flocculent precipitate —turbid fluid	Slight turbidity	Clear
(2) 1 in 20	Large flocculent precipitate—clear fluid	,,	,,
(3) 1 in 40	,, ,,	,,	,,
(4) 1 in 80	Flocculent precipitate —clear fluid	,,	,,
(5) 1 in 160	Small particles—clear fluid	Opalescent	,,
(6) 1 in 320	Opalescent	Clear	,,
(7) 1 in 640	? Trace opalescence	,,	,,
(8) 3 c c saline solution	Clear	,,	,,

Precipitation —Result after 24 hours The middle column shows the precipitation produced by mixing various quantities of typhoid extract with a constant quantity of antityphoid serum The left hand column shows the result obtained when fresh guinea pig serum is added to these various mixtures of extract and serum The third column shows that no precipitate is produced when normal guinea pig serum is mixed with typhoid extract Tube 8 in the left-hand column shows that no precipitate is produced by the mixture of the antityphoid serum with normal guinea pig serum

Complement Fixation Experiment

0 5 c.c extract of *B typhosus* diluted	+0 5 c c antityphoid serum diluted 1 in 20			Extract controls + 0 5 c.c saline solution 0 5 c.c complement 1 in 10
	0 5 c c complement 2 in 5	0 5 c.c complement 1 in 5	0 5 c.c. complement 1 in 10	
(1) 1 in 10	◲	□	□	■
(2) 1 in 20	◲	□	□	▨
(3) 1 in 40	◲	□	□	▨
(4) 1 in 80	■	□	□	▨
(5) 1 in 160	■	◲	□	▨
(6) 1 in 320	■	■	◲	▨
(7) 1 in 640	■	■	■	▨
(8) 0·5 c c saline solution (serum control)	■	■	■	

Complement Fixation —This experiment shows the amount of complement fixed by mixtures of typhoid extract and antiserum identical with those used in the precipitation experiments The dilutions of extracts antiserum and fresh guinea pig serum (complement) were all used in a bulk of 0 5 c c After one hour's incubation each tube received 0 5 c c of a 1 in 20 suspension of sheep corpuscles and 0 5 c c of a 1 in 300 dilution of hæmolytic serum (rabbit *v* sheep) The results were read after a second period of incubation lasting two hours

complement fixation Under these conditions the individual particles which form the precipitate are extremely small, but present in the aggregate an enormously larger surface area than the flocculi of a coarser precipitate It seems probable that there is a direct relationship between the surface area of the particles of the precipitate and the amount of complement fixed.

By taking any one antigen and any one antiserum and by varying the relative proportions of these two ingredients it is possible to prepare mixtures which demonstrate either precipitation without complement fixation or complement fixation without visible precipitation The amount of complement fixed is conditioned by two factors (1) The amount of precipitate formed and (2) the rate of precipitate formation Complement is fixed during the very earliest stages of the aggregation process which forms the precipitate Indeed, after the process has advanced to a visible turbidity very little complement is taken up The relative proportions of antigen and antibody which favour rapid and complete precipitation are positively unfavourable to complement fixation If a constant amount of antiserum be taken it will be found, as a rule, that the quantity of antigen which will produce the best complement fixation is many times less than the amount necessary to produce the largest precipitate. The reason why the two reactions do not run a parallel course is not that they are caused by two different sets of antibodies, precipitins and amboceptors, but because they represent two phases or two stages of the same reaction, and it may not be possible to demonstrate both stages under the same conditions A flocculent precipitate represents the complete and final stage of a change which can be recognised in its earliest and incomplete stage by means of the complement fixation method On the other hand, if the mixture contains a very small amount of the antigen the aggregation process is extremely slow and may never proceed to the point at which even opalescence is produced Such a condition is, however, very favourable to complement fixation

The conditions which we have considered are those in which a relatively small amount of antigen is allowed to interact with a relatively large amount of antiserum In these cases, although no visible precipitate is formed, the early stages of aggregation afford exactly the physical conditions which favour complement fixation We must now consider the conditions which obtain in mixtures containing very small amounts of antiserum and in complement fixation tests a good antiserum can always be used in a dilution of 1 in 100 often 1 in 500 or even 1 in 1000 If however, a cubic centimetre of a 1 in 500 dilution of antiserum be mixed with an equal quantity of a suitable dilution of the homologous antigen, not even a trace of a precipitate can as a rule be detected, for such a mixture contains far too little of the precipitable protein of the antiserum What is the mechanism of complement fixation under these conditions? In a series of experiments (Dean 1912) it was shown that if, to a mixture of antigen and antiserum which fixes complement but produces little or no precipitate, there be added fresh guinea pig serum, a very definite and flocculent precipitate is produced although a comparatively long time (up to 24 hours) may elapse before precipitation is complete An example of such an experiment is given in Table V

Table VI

In this experiment tubes were used, the lower portions of which were narrow and calibrated in order that the amount of precipitate formed could be measured Only one quantity of antigen was employed (3 c c of a 1 in 20 dilution of typhoid extract) and one quantity of the antiserum (3 c c of a 1 in 20 dilution of antityphoid serum) The amount of precipitate formed by the simple mixture of the antigen and antibody is shown in the second column Tube 8 The actual bulk of the precipitate was 10 c mm

TABLE VI —*To Illustrate Result obtained by adding Various Amounts of Fresh Guinea pig Serum (Complement) to a Mixture of Typhoid Extract and Antityphoid Serum*

	3 c c of guinea pig serum	+ 3 c c antityphoid serum 1 in 20 + 3 c c. typhoid extract 1 in 20		+ 3 c c saline solution + 3 c c typhoid extract 1 in 20	+ 3 c c antityphoid serum + 3 c c saline solution	+ 6 c c saline solution
		After 6 hours	After 24 hrs c d *	After 24 hrs	After 24 hrs	After 24 hrs
1	Undiluted	Large flocculi	30 c mm	Clear	Clear	Clear
	Diluted					
2	1 in 2½	,,	30			
3	1 in 5	Small particles. Turbid	20			
4	1 in 10		10			
5	1 in 20		10			
6	1 in 40		10			
7	1 in 80		10			
8	Control 3 c c s.s.†		10			

* c.d = Centrifugalised deposit † s s = Saline solution

All the tubes were incubated for 6 hours at 37° C The tubes were then placed in a cool room at 8° C After 24 hours the tubes in the first column were centrifugalised and the deposits observed All the control tubes remained absolutely clear

The table shows that the addition of guinea pig serum to this mixture caused a very marked increase in the bulk of the precipitate In the tubes containing the large quantities of guinea pig serum the bulk of the precipitate was twice and three times as great as the precipitate produced in the simple mixture of antigen and antibody It is difficult to escape the conclusion that the larger precipitates were partly derived from the proteids of the guinea pig serum

Similar results were obtained in a large series of experiments in which various antigen antibody systems were employed Normal horse and normal sheep serum were shown to be as effective as guinea pig serum in adding to the bulk of the precipitate Similar results were obtained if in place of the whole guinea pig serum a solution of guinea pig euglobulin was employed These experiments led to the conclusion that the interaction of antigen and antibody may cause the precipitation of the globulin of a normal serum if such is added to the mixture That this precipitation of the globulin of normal guinea pig serum is an essential part of the mechanism of complement fixation can hardly be doubted It will be remembered that if euglobulin is precipitated from fresh guinea pig serum by distilled water or weak acid, the complement is split in two fractions the so-called mid piece and the end piece The mid-piece fraction is carried down with the precipitated euglobulin while the end piece remains in solution (Ferrata, 1907, Brand, 1907, Liefmann, 1909, Sachs and Altmann, 1909) Moreover, in complement fixation experiments the mid piece is bound to a much greater extent than the end piece (Skwirsky, 1910, Henderson Smith 1910, Sachs and Bolkowska 1910, Amako, 1910, and Gengou, 1911) It may, however, well be doubted if any such substance as the mid piece fraction of the complement exists The action of the so-called mid piece may be entirely due to the physical state of the adsorbed particles of euglobulin

It has already been mentioned that these precipitates, which occurred in mixtures of antigen antibody and complement were often not formed until several hours had elapsed. The tubes were consequently often left overnight in the ice chest This practice led to the observation that these precipitates are formed most readily at a low temperature and that if after the precipitate has formed, the tubes are placed in an incubator at 37° C the precipitate dissolves and the mixture becomes once more absolutely clear On replacing the tubes in the ice chest the precipitate re forms The behaviour of this precipitate which forms at 0° C and dissolves at 37° C strengthens the belief that we are dealing with an adsorption process At the lower temperature the adsorption of euglobulin by the minute particles of the precipitate is more complete. When the antigen is a cell or bacterium susceptible to lysis the result of this aggregation of the particles of euglobulin is the concentration of the lytic agent present in the complement (so-called end-piece) at the surface of the cell which is to be dissolved For the subsequent and distinct reaction which causes the solution of the cell envelope a relatively high temperature (37° C) is necessary or at any rate, desirable. If the fixation of complement is dependent on an adsorption process we should expect that the reaction would take place with greater facility at a low rather than a high temperature

TABLE VII.

0·5 c c extract of *B typhosus* diluted	+ 0·5 c c. antityphoid serum diluted 1 in 100						+ 0·5 c c saline	
	Complement 2 in 5		Complement 1 in 5		Complement 1 in 10		Complement 1 in 10	
	0° C	37° C	0° C	37° C	0° C	37° C	0° C	37° C
(1) 1 in 5	■	■	□	■	□	□	■	■
(2) 1 in 10	■	■	□	■	□	□	■	■
(3) 1 in 20	■	■	□	■	□	□	■	■
(4) 1 in 40	■	■	◲	■	□	◲	■	■
(5) 1 in 80	■	■	■	■	□	■	■	■
(6) 1 in 160	■	■	■	■	◨	■	■	■
(7) 1 in 320	■	■	■	■	■	■	■	■
(8) 0 5 c c saline					■	■		

In the experiment reproduced in Table VII duplicate sets of the bacterial extract, the antiserum and the complement were prepared Set A was warmed to 37° C and Set B was cooled to 0° C Antigen, antibody, and complement were then mixed in the proportions indicated in the table Set A was then kept for half an hour at 37° C and Set B for half an hour at 0° C Both sets were then exposed to room temperature for one hour Blood and hæmolytic serum were then added to each tube and all tubes were then incubated for two hours at 37° C The results show a very marked difference between the two sets

This experiment shows that in a mixture of typhoid extract and antityphoid serum far more complement is fixed at 0° C than at 37° C Similar results have been obtained with serum and homologous antiserum and with the Wassermann reaction

Moreover, if an experiment be devised to show the rate at which the reaction occurs at the two temperatures it is possible to demonstrate that, although the reaction takes place more rapidly at 37° C, the actual amount of complement fixed is much greater at 0° C This result is best explained on the assumption that complement fixation is a process of adsorption

AGGLUTINATION

The explanation of the agglutination reaction as an adsorption phenomenon has been the thesis of many contributions to the literature of immunity Bordet (1899) considered that agglutinin is adsorbed by the bacilli as dye is adsorbed by filter paper The aggregation of the bacilli is then brought about by changes in the molecular attraction between the bacilli and the surrounding medium The question of agglutination was very thoroughly studied from the adsorption standpoint by Craw (1905) Craw showed that the rate of addition of bacillary suspensions to agglutinating serum is a factor determining the amount of agglutinin fixed by the bacilli By adding a suspension of bacteria in parts to the antiserum Craw was able to show that more agglutinin was removed than is the case when the whole amount of bacillary suspension is added at once

The process of agglutination is probably brought about by an interaction between the antiserum and antigen which has passed out from the bacillus into the medium which immediately surrounds it The result of this interaction is the aggregation of the particles of the globulin of the antiserum on the surface of the bacillus In other words, the proteins of the antiserum are adsorbed by the bacillus For the production of agglutination the presence of precipitable protein is essential. If to a mixture of bacillary emulsion and diluted antiserum there be added a third ingredient, normal serum the agglutination of the bacteria is rendered more complete This reinforcement of the proteins of the antiserum by those of a normal serum has been called conglutination This phenomenon was described independently in 1906 by Muir and Browning and by Bordet and Gay

The substance present in normal serum which is able to aid the agglutination of red cells or bacteria by the homologous antiserum appears to be the euglobulin (Dean, 1911) The effect of adding various dilutions of euglobulin solution to mixtures containing sheep cells and various quantities of the homologous antiserum is seen in Table VIII

TABLE VIII

	1 c c of dilution of hæmolytic serum rabbit *v* sheep	+ 1 c c. middle-piece solution diluted					+ 1 c c. normal saline
		1-10	1-20	1-40	1-80	1-160	
1	1-10	++++	++++	++++	++++	++++	++++
2	1-20	++++	++++	++++	++++	++++	++++
3	1-40	++++	++++	++++	++++	++++	++++
4	1-80	++++	++++	++++	+++	+++	++
5	1-160	++++	++++	++++	+++	+	+
6	1-320	++++	++++	++	++	0	0
7	1-640	+++	++	+	0	0	0
8	1-1280	+++	+	0	0	0	0
9	1 c c. normal saline	0	0	0	0	0	0

Each tube contained a volume of 3 c.c made up of 1 c c. of a 1 in 20 suspension of washed red cells of the sheep 1 c c of a dilution of heated hæmolytic serum (rabbit *v* sheep) and 1 c c of the diluted middle piece solution The tubes numbered 9 in each row, contained no immune serum and the bulk was made up to 3 c.c by the addition of 1 c c of normal saline solution In these tubes no agglutination occurred the middle piece solution by itself being unable to agglutinate the red cells The tubes in the last column contained 1 c c of the suspension of red cells, 1 c c of a dilution of the hæmolytic serum, and 1 c c of normal saline solution *The agglutinative power of the immune body acting by itself is shown in this column* In the remaining columns is shown the *effect of the combined action* of the immune body and the middle piece solution

That in such a reaction the euglobulin is actually precipitated may be shown by an experiment *similar to that* shown in Table IX

TABLE IX

Tube	Solution of laked corpuscles	Antiserum rabbit v sheep cells 1 in 200	Normal saline solution	Solution of middle piece 1 in 10	Normal saline solution
	c c	c c	c.c	c c.	c c
1	5	5	—	10	—
2	5	—	5	10	—
3	5	5	—	—	10
4	—	5	5	10	—

One cubic centimetre of thoroughly washed sheep corpuscles was laked with 9 c c *of distilled water* The solution of corpuscles was made up to the usual saline content by the addition of 10 c c of 1 7 per cent sodium chloride solution After filtering many times through filter paper a perfectly clear solution was obtained, representing a 1 in 20 solution of red corpuscles in *normal saline The following* mixtures were then prepared —

In tube 1, 5 c c of the solution of corpuscles was added to 5 c c of the diluted antiserum In the control tubes 2, 3 and 4 the ingredients indicated in the first three columns were mixed *The volume in each tube* was then 10 c c All the tubes were allowed to remain for *one hour at room* temperature They were then examined, and the contents were found to be absolutely clear To tubes 1, 2, and 4 were then added 10 c c of the 1 in 10 middle piece solution, to tube 3 was *added 10 c c of normal saline solution* All four tubes were then incubated for four hours at 37° C and then placed for 12 hours in a cool chamber at about 8° C Tube 1 was then found to contain a small but definite white flocculent deposit The three control tubes remained absolutely clear

CONCLUSIONS

In discussing the merits of rival theories of the mechanism of the *serum reactions it has been frequently observed* that Ehrlich s hypothesis *alone provides an explanation* of the problem of specificity The value of the side chain theory as an explanation of specificity may however, be doubted To say that antigen unites with antibody as a key fits a lock is no explanation at all It is merely a diagrammatic representation of the supposed facts Of the nature of the fundamental reaction between antigen and antibody we have, at the present time, no knowledge But, in all the serum reactions which have been above considered the immediate consequence is an aggregation of globulin particles around the antigen The degree *to which the* aggregation or precipitation proceeds *depends entirely* on the experimental conditions, on the relative proportions of antigen and antibody in the mixture, on the nature of the antigen containing substance, red corpuscle bacillus, or normal serum on the presence of some third factor, a normal serum containing complement or conglutinin In other words the various serum reactions are various methods of observing and measuring one single reaction The simplest of these reactions is the precipitation reaction for *in it* the formation of the precipitate is directly observed In the other reactions the aggregation of particles *may* be less *complete* and the change *is measured* by indirect methods

The main *phenomena* are most readily accounted for by Bordet s adsorption theory, and no useful purpose would seem *to* be served by postulating the existence of a separate kind of antibody for each of these reactions The reactions are no doubt of a very complex nature, as all reactions which occur in a mixture of colloids must be and it is *to be* anticipated that great difficulties must be encountered before any entirely satisfactory explanation is arrived at Similar difficulties have been met with in the past, whenever the attempt has been made to explain physiological phenomena in the light of the laws of chemistry and physics These difficulties will in time be met and with a more perfect knowledge of the mechanism of the serum reactions there will be attained a more perfect knowledge of the laws which govern both natural and acquired immunity

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Presidential Address

ON

THE STATE OCTOPUS AND THE MEDICAL PROFESSION

Delivered at the Harveian Society of London on Jan 11th 1917

BY EDMUND CAUTLEY, M D CAMB,
F R C P LOND,

SENIOR PHYSICIAN AT THE METROPOLITAN HOSPITAL AND THE BELGRAVE HOSPITAL FOR CHILDREN

GENTLEMEN,—Year by year the State, like an *octopus* stretching out one or more of its tentacles, grasps and absorbs some portion of the rights privileges, or emoluments of the medical profession or the public I propose to indicate roughly, for time will not permit me to do so in great detail, the methods and progress of this absorption I shall appreciate its value to the public even if it is detrimental to our profession as a whole or to individual sections of it for I hold the opinion that the public welfare is our highest aim and object And I shall try to gauge its *progress* and suggest the best methods for watching and directing its course

CHANGED RELATIONSHIP OF THE STATE THE PUBLIC, AND THE MEDICAL PROFESSION

Half a century ago there was little State interference with the medical profession, and *few burdens,* except registration, were laid upon it At *this remote period* it was *customary* for the eminent lecturer who gave *an opening* address at a medical school to speak in grandiloquent language of the noble aims of our profession It was generally insisted that the student must not enter on its pursuit for the sake of filthy lucre, that the good of the public was alone of importance and that life should be lived on a basis of pure altruism even if it did not provide substantial meals Verily an opening address was a true eye opener The lecturer was usually a successful man who did *not realise the needs of the* common herd or had *forgotten* earlier *impecunious days, though occasionally* one was bold enough to recall the *principle* that the labourer is worthy of his hire or else he spoke with his tongue in his cheek

Even in those days the State exploited the services of the profession, for the medical attendant was compelled to give a death certificate without fee And if he happened to be an officer of a public institution and an inquest were held on a patient who died therein, he had to give expert evidence when called on he had to make a skilled post mortem examination should the coroner *order* one and he had *to* waste valuable *time* in the precincts of the court *and all* this without fee or reward, receiving thanks rarely and ungracious criticism not infrequently No wonder it is

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Continued from preceding column

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more satisfactory, as this exploitation of our youngest members still exists, that the patient should die on the steps of the hospital rather than across the threshold

Under the Public Health Act of 1875 urban and rural sanitary districts were formed Medical officers of health were appointed in charge of these districts. A diploma in public health was evolved in order to specialise this branch of service and supply evidence of the examinational qualifications of those applying for such posts Since then the medical officer of health though often underpaid, has developed into a being of imposing power and authority under the ægis of the Local Government Board In a sense he is the lily of the profession, for he toils not neither does he spin in the practice of medicine, unless he is in charge of an isolation hospital He is no longer a medical man , he has sloughed his skin and unfortunately has become a departmental official, to whom the interests of the profession are only of minor importance.

Many of the burdens thrust upon our patient shoulders have arisen through the uncontrolled activities of these officers or at their instigation Thus, we have to notify cases of infectious disease Year by year more and more diseases are included in this category , perhaps at first only in some urban district and on the *ipse dixit* of a medical officer of health who speaks to his local council with the dogmatic voice of a god for he alone is assumed to have knowledge of the subject For instance notification of whooping cough is insisted on in some districts in spite of the fact that there is no evidence of its value in reducing the spread of the disease and that, generally speaking, it is not diagnosed among the poorer classes until the whoop is characteristic and the infectious stage almost over Poliomyelitis has also been added to the list, although there is no evidence of its conveyance by direct infection And in 1913-14 ophthalmia neonatorum was wisely added. Of course the main object of notification *is to* control the spread of the disease and isolate its source It sometimes is beneficial in leading to efficient treatment But I *maintain* that no disease should be made notifiable unless such a measure is approved by an authoritative body representative of our profession

In 1907 the medical inspection of school children was authorised by Parliament and medical officers were appointed for this purpose. It was not a great step onward to the treatment of enlarged tonsils and adenoids and errors of refraction. This is partly carried out in hospitals and partly by general practitioners in semi private clinics Seeing that severe hæmorrhage is possible after operation, such clinics ought to be provided with an emergency bed Possibly a further step will be the treatment of all ailments in school children at these clinics and the gradual evolution of numerous small centres of semi hospital practice which *may* or may not be to the advantage of the public and the profession Bear in mind that the school doctor does not treat *these patients* at present He measures and he weighs them collecting masses of statistics He examines them and recommends treatment He, *too*, has become a departmental officer

The Public Health (Tuberculosis) Regulations of 1912 have transferred the treatment *of tuberculous* patients in great measure to public officials with medical qualifications These patients now come under the *conjoint* charge of the medical officer of health, the medical officer of the tuberculosis dispensary and perhaps a sanatorium medical officer It is possible that all cases rich and poor, will eventually be brought under such control and that the treatment of patients with tuberculosis, especially of the lungs, will pass out of the hands of the general practitioners into those of departmental officers

The Mental Deficiency Act of 1913, in operation since April 1st, 1914 has also affected our relations with the public and the State

The National Insurance Act brings home to us the profound changes which are taking place in the relationship between the medical profession and the public, through the medium of the State and its various subordinate bodies, such as county and borough councils municipal bodies, and boards of guardians

"MENTALITIES"

Let me digress for a moment and after the style of a virulent medical controversialist, make a few preliminary remarks on what are at present called "mentalities" Let me premise that ' change" is not synonymous with progress ' though to some minds all change is progress In actual life we meet with two distinct types of mentality, though the bulk of mankind occupy an intermediate position One man goes baldheaded for change He is an iconoclast He destroys an existing institution because he sees evil in it, but he lacks the intelligence or the patience to think out logically the alternative scheme in his mind and the evils likely to develop in his new Utopia. The Insurance Act and other political measures are priceless illustrations of this character

In golden visions a new land legislation was going to hand over that Castle in Spain the latent wealth in our agricultural industry, to those unfortunate men, the failures in the towns They were to go "back to the land" and earn vast sums from the cultivation of the ground in spite of their lack of training and education in one of the most difficult of trades, one which can only be learnt thoroughly by an intimate experience from childhood of all the processes of agriculture

So, too, vast sums were to be drained into the Treasury by means of an increment duty The result, as foretold by the opponents of this measure, has been a great pecuniary loss to the Treasury and a disadvantage to the poor, by reducing the provision of cottages and inducing a rise in rents Rather than attempt to raise money and at the same time put a drag on the building industry, it would have been wiser and cheaper to spend five millions a year, one day s war expenditure, on the building of cottages and other dwellings for the wage-earning classes

Usually the man of this type regards the medical profession as a "monopoly"—that blessed word which damns without explanation of its meaning He little knows that the monopoly consists in the payment of fees to the State, for various degrees and a licence to practise in return for an amount of protection which may be summed up in the power to sue for fees for services rendered Neither the public nor the profession is protected against the evils of quacks and quack medicines Anyone may practise our art in all its branches so long as he does not pretend he is a qualified medical practitioner, though he is liable to prosecution for manslaughter if his patient dies And under the Apothecaries Act of 1815, Section xx , he is liable to a penalty (fine) if he practises as an apothecary Of so little value is this State protection that probably any one of you would make a larger income out of our woolly headed public by dropping your titles and diplomas and advertising a sure remedy for all the ailments of mankind I would suggest a pill which acts mildly and efficiently, purging the vile body of all its ill humours and the affiatus which is not divine

The other type of man is less adventurous in the doing of good or evil by interference with the ordinary routine of life He does not set the world ablaze to advertise his own importance He is devoid of the vanity which lies at the root of the desire to put the world to rights He is more or less satisfied that all is for the best in the best of all possible worlds, and that it is better to endure the ills he knows than to stir up others which may be worse Such a man becomes stereotyped in thought and action in speech more dogmatic as his arteries *harden*, and somewhat intolerant of new ideas even if of German origin Steadily and satisfactorily he conducts the *routine* business of the little world in which he lives Slowly and cautiously he tests and perhaps adopts, new hypotheses and fresh methods of treatment In the face of fresh ideas it is his habit to ' wait and see " Yet, withal, he is tardily progressive, not wildly careering after the exploitation of some new system of treatment or synthetic drug, but patiently sifting and adding to the sum of knowledge

Roughly, the difference between these two characteristic mentalities is like that between youth and age Fortunately most of us occupy an intermediate position, neither wildly iconoclastic nor too rigidly stereotyped Few seem to get beyond middle age in the realms of mind, until the final rapid subsidence into complete senility or retirement into the country and a vegetable existence It is medical men of this intermediate type who are so badly needed on State and municipal committees Were such an influence more in action we should not so frequently be up against some new thing experimental in character rather than of proved value

NEW SCHEMES

I have already pointed out that many a scheme is evolved by the Local Government Board, or a subsidiary council, without obtaining the *consultative* opinion of any representative medical body, and often on the mere *ipse dixit* of

dilution of the hæmolytic serum, and 1 c c of normal saline solution The agglutinative power of the immune body acting by itself is shown in this column In the remaining columns is shown the effect of the combined action of the immune body and the middle piece solution

That in such a reaction the euglobulin is actually precipitated may be shown by an experiment similar to that shown in Table IX

TABLE IX

Tube	Solution of laked corpuscles	Antiserum rabbit v sheep cc is 1 in 200	Normal saline solution	Solution of middle piece 1 in 10	Normal saline solution
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3	5	5	—	—	10
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In tube 1, 5 c c of the solution of corpuscles was added to 5 c c of the diluted antiserum In the control tubes 2, 3 and 4 the ingredients indicated in the first three columns were mixed The volume in each tube was then 10 c c All the tubes were allowed to remain for one hour at room temperature They were then examined, and the contents were found to be absolutely clear To tubes 1, 2, and 4 were then added 10 c c of the 1 in 10 middle piece solution to tube 3 was added 10 c c of normal saline solution All four tubes were then incubated for four hours at 37° C and then placed for 12 hours in a cool chamber at about 8° C Tube 1 was then found to contain a small but definite white flocculent deposit The three control tubes remained absolutely clear

CONCLUSIONS

In discussing the merits of rival theories of the mechanism of the serum reactions it has been frequently observed that Ehrlich s hypothesis alone provides an explanation of the problem of specificity The value of *the side-chain theory* as an explanation of specificity may however, be doubted To say that antigen unites with antibody as a key fits a lock is no explanation at all It is merely a diagrammatic representation of the supposed facts Of the nature of the fundamental reaction between antigen and antibody we have at the present time, no knowledge But in all the serum reactions which have been above considered the immediate consequence is an aggregation of globulin particles around the antigen The degree to which the aggregation or precipitation proceeds depends entirely on the experimental conditions on the relative proportions of antigen and antibody in the mixture, *on the nature of the* antigen containing substance *red corpuscle* bacillus or normal serum on the presence of *some* third factor a *normal serum* containing complement or conglutinin In other words the various serum reactions are various methods of observing and measuring one single reaction The simplest of these reactions is the precipitation reaction for in it the formation of the precipitate is directly observed In the other reactions the aggregation of particles may be less complete and the change is measured by indirect methods

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The Mental Deficiency Act of 1913 in operation since April 1st, 1914 has also affected our relations with the public and the State

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"MENTALITIES"

Let me digress for a moment and after the style of a virulent medical controversialist, make a few preliminary remarks on what are at present called "mentalities" Let me premise that "change" is not synonymous with 'progress,' though to some minds all change is progress In actual life we meet with two distinct types of mentality, though the bulk of mankind occupy an intermediate position One man goes baldheaded for change He is an iconoclast He destroys an existing institution because he sees evil in it, but he lacks the intelligence or the patience to think out logically the alternative scheme in his mind and the evils likely to develop in his new Utopia The Insurance Act and other political measures are priceless illustrations of this character

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So, too, vast sums were to be drained into the Treasury by means of an increment duty The result, as foretold by the opponents of this measure, has been a great pecuniary loss to the Treasury and a disadvantage to the poor, by reducing the provision of cottages and inducing a rise in rents Rather than attempt to raise money and at the same time put a drag on the building industry, it would have been wiser and cheaper to spend five millions a year, one day's war expenditure, on the building of cottages and other dwellings for the wage earning classes

Usually the man of this type regards the medical profession as a "monopoly"—that blessed word which damns without explanation of its meaning He little knows that the monopoly consists in the *payment of fees to* the State, for various degrees and a licence to practise, in return for an amount of protection which may be summed up in the power to sue for fees for services rendered Neither the public nor the profession is protected against the evils of quacks and quack medicines Anyone may practise our art in all its branches so long as he does not pretend he is a qualified medical practitioner, though he is liable to prosecution for manslaughter if his patient dies And under the Apothecaries Act of 1815, Section xx , he is liable to a penalty (fine) if he practises as an apothecary Of so little value is this State protection that probably any one of you would make a larger income out of our woolly headed public by dropping your titles and diplomas and advertising a sure remedy for all the ailments of mankind I would suggest a pill, which acts mildly and efficiently, purging the vile body of all its ill humours and the afflatus which is not divine

The other type of man is less adventurous in the doing of good or evil by interference with the ordinary routine of life He does not set the world ablaze to advertise his own importance He is devoid of the vanity which lies at the root of the desire to put the world to rights He is more or less satisfied that all is for the best in the best of all possible worlds, and that it is better to endure the ills he knows than to stir up others which may be worse Such a man becomes stereotyped in thought and action in speech more dogmatic as his arteries harden, and somewhat intolerant of new ideas, even if of *German* origin Steadily and satisfactorily he conducts the routine business of the little world in which he lives *Slowly* and cautiously he tests, and perhaps adopts, new *hypotheses* and fresh methods of treatment In the face of fresh ideas it is his habit to 'wait and see" Yet *withal*, he is tardily progressive, not wildly careering after the exploitation of some new system of treatment or synthetic drug, but patiently sifting and adding to the sum of knowledge

Roughly, the difference between these two characteristic mentalities is like that between youth and age Fortunately most of us occupy an intermediate position, neither wildly iconoclastic nor too rigidly stereotyped Few seem to get beyond middle age in the realms of mind, until the final rapid subsidence into complete senility or retirement into the country and a vegetable existence It is medical men of this intermediate type who are so badly needed on State and municipal committees Were such an influence more in action we should not so frequently be up against some new thing, experimental in character rather than of proved value

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dilution of the hæmolytic serum, and 1 c c of normal saline solution The agglutinative power of the immune body acting by itself is shown in this column In the remaining columns is shown the effect of the combined action of the immune body and the middle piece solution

That in such a reaction the euglobulin is actually precipitated may be shown by an experiment similar to that shown in Table IX

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CONCLUSIONS

In discussing the merits of rival theories of the mechanism of the serum reactions it has been frequently observed that Ehrlich s hypothesis alone provides an explanation of the problem of specificity The value of the side chain theory as an explanation of specificity may however, be doubted To say that antigen unites with antibody as a key fits a lock is no explanation at all It is merely a diagrammatic representation of the supposed facts Of the nature of the fundamental reaction between antigen and antibody we have at the present time, no knowledge But, in all the serum reactions which have been above considered the immediate consequence is an aggregation of globulin particles around the antigen The degree to which the aggregation or precipitation proceeds depends entirely on the experimental conditions on the relative proportions of antigen and antibody in the mixture, on the nature of the antigen containing substance red corpuscle bacillus or normal serum on the presence of some third factor, a normal serum containing complement or conglutinin In other words the various serum reactions are various methods of observing and measuring one single reaction The simplest of these reactions is the precipitation reaction, for in it the formation of the precipitate is directly observed In the other reactions the aggregation of particles may be less complete and the change is measured by indirect methods

The main phenomena are most readily accounted for by Bordet s adsorption theory and no useful purpose would seem to be served by postulating the existence of a separate kind of antibody for each of these reactions The reactions are no doubt of a very complex nature, as all reactions which occur in a mixture of colloids must be and it is to be anticipated that great difficulties must be encountered before any entirely satisfactory explanation is arrived at Similar difficulties have been met with in the past whenever the attempt has been made to explain physiological phenomena in the light of the laws of chemistry and physics These difficulties will in time be met and with a more perfect knowledge of the mechanism of the serum reactions there will be attained a more perfect knowledge of the laws which govern both natural and acquired immunity

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Presidential Address

ON

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Delivered at the Harveian Society of London on Jan 11th, 1917,

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F R C P LOND,

SENIOR PHYSICIAN AT THE METROPOLITAN HOSPITAL AND THE BELGRAVE HOSPITAL FOR CHILDREN

GENTLEMEN,—Year by year the State, like an octopus stretching out one or more of its tentacles, grasps and absorbs some portion of the rights, privileges, or emoluments of the medical profession or the public I propose to indicate roughly, for time will not permit me to do so in great detail, the methods and progress of this absorption I shall appreciate its value to the public, even if it is detrimental to our profession as a whole or to individual sections of it for I hold the opinion that the public welfare is our highest aim and object And I shall try to gauge its progress and suggest the best methods for watching and directing its course

CHANGED RELATIONSHIP OF THE STATE, THE PUBLIC, AND THE MEDICAL PROFESSION

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more satisfactory, as this exploitation of our youngest members still exists, that the patient should die on the steps of the hospital rather than across the threshold

Under the Public Health Act of 1875 urban and rural sanitary districts were formed Medical officers of health were appointed in charge of these districts. A diploma in public health was evolved in order to specialise this branch of service and supply evidence of the examinational qualifications of those applying for such posts Since then the medical officer of health though often underpaid, has developed into a being of imposing-power and authority under the ægis of the Local Government Board In a sense he is the lily of the profession, for he toils not neither does he spin in the practice of medicine, unless he is in charge of an isolation hospital He is no longer a medical man , he has sloughed his skin and unfortunately has become a departmental official, to whom the interests of the profession are only of minor importance

Many of the burdens thrust upon our patient shoulders have arisen through the uncontrolled activities of these officers or at their instigation Thus, we have to notify cases of infectious disease Year by year more and more diseases are included in this category , perhaps at first only in some urban district and on the *ipse dixit* of a medical officer of health, who speaks to his local council with the dogmatic voice of a god, for he alone is assumed to have knowledge of the subject For instance notification of whooping cough is insisted on in some districts in spite of the fact that there is no evidence of its value in reducing the spread of the disease, and that, generally speaking, it is not diagnosed among the poorer classes until the whoop is characteristic and the infectious stage almost over Poliomyelitis has also been added to the list, although there is no evidence of its conveyance by direct infection And in 1913–14 ophthalmia neonatorum was wisely added Of course the main object of notification is to control the spread of the disease and isolate its source. It sometimes is beneficial in leading to efficient treatment But I maintain that no disease should be made notifiable unless such a measure is approved by an authoritative body representative of our profession

In 1907 the medical inspection of school children was authorised by Parliament and medical officers were appointed for this purpose It was not a great step onward to the treatment of enlarged tonsils and adenoids and errors of refraction This is partly carried out in hospitals and partly by general practitioners in semi private clinics Seeing that severe hæmorrhage is possible after operation, such clinics ought to be provided with an emergency bed Possibly a further step will be the treatment of all ailments in school children at these clinics and the gradual evolution of numerous small centres of semi hospital practice which may or may not be to the advantage of the public and the profession Bear in mind that the school doctor does not treat these patients at present He measures and he weighs them collecting masses of statistics He examines them and recommends treatment He, too, has become a departmental officer

The Public Health (Tuberculosis) Regulations of 1912 have transferred the treatment of tuberculous patients in great measure to public officials with medical qualifications These patients now come under the conjoint charge of the medical officer of health the medical officer of the tuberculosis dispensary, and perhaps a sanatorium medical officer It is possible that all cases rich and poor, will eventually be brought under such control and that the treatment of patients with tuberculosis especially of the lungs, will pass out of the hands of the general practitioners into those of departmental officers

The Mental Deficiency Act of 1913 in operation since April 1st 1914 has also affected our relations with the public and the State

The National Insurance Act brings home to us the profound changes which are taking place in the relationship between the medical profession and the public, through the medium of the State and its various subordinate bodies, such as county and borough councils, municipal bodies, and boards of guardians

"MENTALITIES"

Let me digress for a moment and after the style of a virulent medical controversialist make a few preliminary remarks on what are at present called ‘ mentalities ’ Let me premise that ‘change" is not synonymous with ‘progress" though to some minds all change is progress

In actual life we meet with two distinct types of mentality, though the bulk of mankind occupy an intermediate position One man goes baldheaded for change He is an iconoclast He destroys an existing institution because he sees evil in it, but he lacks the intelligence or the patience to think out logically the alternative scheme in his mind and the evils likely to develop in his new Utopia The Insurance Act and other political measures are priceless illustrations of this character

In golden visions a new land legislation was going to hand over that Castle in Spain, the latent wealth in our agricultural industry, to those unfortunate men the failures in the towns They were to go "back to the land" and earn vast sums from the cultivation of the ground in spite of their lack of training and education in one of the most difficult of trades, one which can only be learnt thoroughly by an intimate experience from childhood of all the processes of agriculture

So, too, vast sums were to be drained into the Treasury by means of an increment duty The result, as foretold by the opponents of this measure, has been a great pecuniary loss to the Treasury and a disadvantage to the poor, by reducing the provision of cottages and inducing a rise in rents Rather than attempt to raise money and at the same time put a drag on the building industry, it would have been wiser and cheaper to spend five millions a year, one day s war expenditure, on the building of cottages and other dwellings for the wage earning classes

Usually the man of this type regards the medical profession as a "monopoly"—that blessed word which damns without explanation of its meaning He little knows that the monopoly consists in the payment of fees to the State, for various degrees and a licence to practise, in return for an amount of protection which may be summed up in the power to sue for fees for services rendered Neither the public nor the profession is protected against the evils of quacks and quack medicines Anyone may practise our art in all its branches so long as he does not pretend he is a qualified medical practitioner, though he is liable to prosecution for manslaughter if his patient dies And under the Apothecaries Act of 1815, Section xx., he is liable to a penalty (fine) if he practises as an apothecary Of so little value is this State protection that probably any one of you would make a larger income out of our woolly headed public by dropping your titles and diplomas and advertising a sure remedy for all the ailments of mankind. I would suggest a pill, which acts mildly and efficiently, purging the vile body of all its ill humours and the afflatus which is not divine

The other type of man is less adventurous in the doing of good or evil by interference with the ordinary routine of life. He does not set the world ablaze to advertise his own importance He is devoid of the vanity which lies at the root of the desire to put the world to rights He is more or less satisfied that all is for the best in the best of all possible worlds and that it is better to endure the ills he knows than to stir up others which may be worse Such a man becomes stereotyped in thought and action in speech more dogmatic as his arteries harden, and somewhat intolerant of new ideas, even if of German origin Steadily and satisfactorily he conducts the routine business of the little world in which he lives Slowly and cautiously he tests, and perhaps adopts, new hypotheses and fresh methods of treatment In the face of fresh ideas it is his habit to ‘wait and see" Yet, withal, he is tardily progressive, not wildly careering after the exploitation of some new system of treatment or synthetic drug, but patiently sifting and adding to the sum of knowledge

Roughly, the difference between these two characteristic mentalities is like that between youth and age Fortunately most of us occupy an intermediate position, neither wildly iconoclastic nor too rigidly stereotyped Few seem to get beyond middle age in the realms of mind, until the final rapid subsidence into complete senility or retirement into the country and a vegetable existence. It is medical men of this intermediate type who are so badly needed on State and municipal committees Were such an influence more in action we should not so frequently be up against some new thing, experimental in character rather than of proved value

NEW SCHEMES.

I have already pointed out that many a scheme is evolved by the Local Government Board or a subsidiary council, without obtaining the consultative opinion of any representative medical body, and often on the mere *ipse dixit* of

some local medical officer of health Sometimes it is initiated by a self appointed leader of the profession, who collects others like unto himself We have had instances of this in the development of the crusade against tuberculosis Occasionally these ' leaders ' are in opposition, as in the painful case of the manifesto published in favour of alcohol But however initiated, the scheme is set in action by an Order in Council or some local by law, and we are expected to carry it out without murmur or protest

As a rule these fresh burdens on the doctor are unaccompanied by fees for the extra work, or at most only nominal ones For instance, the fee for notification of infectious disease used to be 2s 6d for a private and 1s for a hospital case It is not obvious why the extra work should be paid for at a lower rate when it is done by an underpaid doctor attached to a public institution The profession has recently received its just reward for submitting to such an inequality in payment for identical work Its insignificant fee of half a crown has been reduced to a shilling for private cases I wonder that the shilling fee for hospital cases has not been halved And this reduction has been enforced at a time when the doctors are doing an enormous amount of gratuitous work and the cost of living has greatly increased , and it was carried by Members of Parliament receiving £400 a year, of which £100 is free of income tax, at a time when the services of most of them are of little value and their work in the House of Commons has much decreased.

The Insurance Act

The Insurance Act is a great conception inadequately carried out Instead of being used as a vote catching measure and including all employees, no matter their age and health, it should have been started on a smaller scale for the public benefit alone It ought to have been limited at first to employees under 25 years of age, the healthiest class in the community In the course of 40 years all the wage earning classes up to the age of 65 years would have been insured No doubt 40 years is too long for the politician, though but a moment in the life of a nation I believe that the soundest policy would be to start a new scheme on these lines, independent of the present one, which would eventually lapse and be replaced by an efficient Act In its present state the financial basis of the Act is less than doubtfully sound, its administration chaotic, its innumerable regulations almost impossible to understand and the general result one of dissatisfaction Practically it has resulted in a huge club system on a State basis possessing all the evils of the old club system and none of its advantages to the members from a medical point of view, but financially profitable to the doctors and the clerical staff. As far as I can judge, the only advantage to the public is that every insured patient is entitled to demand treatment for the most trivial ailment and a certificate enabling him to obtain sick benefit if unable to work with the result that trivial ailments have become much more frequent and a desire of obtaining a paid holiday has led to their exaggeration

From the public point of view I regard the medical section of the Act as a failure It is not as good as the old club system with its admitted evils Thousands of the insured are dissatisfied and avoid their panel doctors Adequate treatment has not been secured—merely ordinary out patient treatment, the patient being referred to a hospital for more serious ailments

The Government has not carried out Mr Lloyd George's promises Absolute freedom as to choice of doctor is not in force, he must be on the panel Still less is it possible to make a change when desired Permission to make own arrangements' outside the panel have been generally refused

Panel doctors are practically State officials and their sympathy with the patients has diminished There is more illness more malingering and neurasthenia, greater prolongation of illness and an increasing demand for certificates Often a patient obtains a larger income when ill than when at work Disease has to be treated more or less according to rules and the cheaper drugs used for panel patients help to prolong illness

Some complaints from panel patients are trivial and contemptible The members of a society for agricultural labourers complain bitterly that the doctor now charges 5s for examination of an applicant for membership whereas in the old club the fee was only 2s They refuse to pay it and the society is languishing for want of new members It does not appear to have been pointed out to them that the weekly wage of the labourer has gone up more than 5s , that the doctor has also to face the increased cost of living, and that in the old club the doctor took a much more sympathetic interest, regarding it as partly a charity, whereas insurance is a State affair

And I want to lay it down as an axiom, to be borne in mind by every member of our profession, that gratuitous expert services should not be rendered to the State or any rate levying body No such service is appreciated at its true value It is not charitable service to the poor, and merely lightens to an infinitesimal extent the burden on tax and rate-payers many of whom are much better off than the exploited doctor

Payments under the Act

Under ordinary systems of insurance it is customary to pay a premium in advance to cover a definite liability generally for a year The Insurance Act tempers the wind to the shorn lamb, for the insured patient has to pay weekly premiums for six months before becoming entitled to benefit By this means a big fund was formed of contributions from the employers employees, and the State It should have amounted to 13s per female and 15s 2d per male, apart from the State contribution At the end of six months the work of the doctor began, and there does not seem any just reason why he should not have been paid 7s per head at once for each patient accepted by him Apparently the accumulated preliminary fund was devoted to payment for clerical work a great burden on the finance of the Act—a veritable old man of the sea

The Act fixed an annual capitation grant for medical treatment and Mr Lloyd George frequently stated it would be at least 7s , possibly more, as there was a lien on a floating sixpence But agreements between the State and the profession are apparently only to be kept by the latter In step the Insurance Commissioners with powers above and not under the control of Parliament, and, subsequent to the signature of these agreements, regulations are issued which make the annual capitation fee a sum of no definite amount and not payable within certain limits of time The panel doctor receives an unnamed sum paid on uncertain dates and "as soon as may be" after its receipt by the Commissioners

The medical profession undertook the treatment of the insured for a minimum fee of 7s per annum For 1915 the payment was 5/7 96 per head This is explained by the Commissioners as an equivalent payment because some of the doctors' lists are inflated It is a method for counteracting the errors due to inefficient book keeping It creates great injustice A doctor with an uninflated list receives a grant deficient to the extent of 20 per cent The Commissioners have also determined that their liability to the panel doctor ceases with the death of the patient, although the doctor undertook the contract for a year If the insured person dies on the first day of the year the medical fund is only to get 1/365th part of 7s , and this in spite of the fact that the Commissioners have received payment for six months in advance It does not appear that the State is carrying out its bargain fairly

New Regulations for 1917

Clause 3 deals with the provision of medical services by any public authority over and above those provided by panel doctors It states with dangerous vagueness that under such circumstances the practitioner ' shall take such other steps as may be reasonably necessary in order that the patient may derive full advantage from the provision of such services " Obviously the Commissioners will decide what is 'reasonable ' and, as far as one can judge they expect the doctor to provide particulars as to the past history diagnosis and treatment , take and send specimens for laboratory examination , and attend if necessary with the patient for consultation No extra payment is suggested for this fresh burden which may become excessive And there is no safeguard against the extension of so-called reasonable provisions This regulation gives the Commissioners power to increase the duties of the panel doctors without compensation It has been accepted at present for the treatment of venereal diseases which are said to have increased very greatly and require more adequate methods of control But it may be applied in many ways if consultative advice is to be placed within the reach of panel patients, giving the doctor much extra work and with no extra expense to the patient Instead of reducing the annual capitation grant the tendency will be to increase the doctor's duties and obligations

The Disabled Soldier and Sailor

The disabled soldier and sailor have created another problem for the doctors and Commissioners Weak minded sentimentalists nobly say that the medical profession should shoulder the burden of looking after these heroes But it is the State which should bear the burden, not an individual section of the community Had the Government with a little foresight and apparent generosity paid into the insurance funds the full amounts due from them as employers, the full contributions of their employees and the State grant, they might have been justified in saying that, as the medical profession had received the insurance premiums for medical services during the war, they must undertake the subsequent liability But an extra burden has fallen on the panel doctors during the war, for a huge number of healthy lives have been removed from insurance, and the relative proportion of illness among the remainder is naturally greater It would be grossly unfair for these men to come back into insurance with an increased sickness liability and the burden of their treatment be thrown on the panel doctors without extra payment. Special financial arrangements should be made for the treatment of the disabled when they are discharged

VENEREAL DISEASES

The provision of treatment for these affections under the public authorities is a great step to more efficient control, limitation of their extension, and efficacious treatment But it is another inroad into the old relationship between the public and the profession if it is made obligatory So far it is not compulsory and the supporters of the scheme have not ventured to "go the whole hog" If so, notification would be essential. The main argument against it is that it would lead to concealment of disease, to evasion of treatment or to treatment by quacks Surely the answer is the abolition of quacks and quack medicines and the punishment by imprisonment of anyone, except a qualified practitioner who undertakes the treatment

Compulsory notification has been adopted for many infectious diseases, as well as for others in which the transmission of infection by personal contact has not yet been adequately proved Why, then, shirk it in this case? Is it because the Government fear the loss of revenue from stamp duties on patent medicines, or the attacks of newspapers which receive large sums of money for advertisements and puffs of these wares? More probably it lies in the absence of social stigma in the present notifiable diseases On the other hand, the moral effect of notification on the rising generation would be enormous Few young men dread infection as much as they fear being "found out" by their parents And the risk of evasion is minimised by the provision of free treatment, for, under the new scheme, it is available for rich and poor and under safeguards as to privacy But the whole scheme is defective firstly, because no really authoritative medical body expressed its opinion thereon, secondly, because it establishes a new class of specialist, and thirdly, because the safeguards as to privacy are likely to prove illusory

THE OUTLOOK

The united efforts of panel practice, of State and municipal treatment of tuberculosis venereal and infectious diseases, the possible provision of ante natal and post-natal clinics and the existence of numerous departmental medical hybrids in the shape of medical officers of health school doctors Poor law and asylum doctors tend to the establishment of a State medical service An additional influence will be the return from the war of a large number of medical men, with no experience of civil practice, who may lack the means or the inclination to enter on such a mode of livelihood and who may have become enamoured of an annual stipend, fixed duties liberal freedom and the independence of character acquired in the treatment of those submitted to their tender care and unable to change their doctor Many will be disposed to sink to the level of the salaried official Meetings have already been held in France at the instigation of certain politicians, for the discussion of such a public service.

It is probable that in time each panel doctor will be limited to a definite number of panel patients—say, two to three thousand From this it will be only a small step and perhaps it may be advocated by the doctor, that panel practice should be limited in area and that each such doctor shall have charge of all the insured patients in a limited district Of course, this would abolish the promised free choice of doctor, but I fancy this privilege is not often obtained or of much value The natural sequence will be the conversion of panel practice into one of whole time appointments And the insurance of dependents will make this more certain, as finance on present lines will be impossible It is obvious also that if clinics and pathological laboratories are provided for venereal diseases a similar demand will be made for panel patients with other ailments And, indeed, it seems logical that, if the insurance scheme is to be worked adequately on its medical side, it must be extended to the provision of hospital treatment with all the advantages pertaining thereto Our hospitals will have to be assisted by the State or out of the rates or taken over by the State I am strongly opposed to the idea of a State medical service, but I see no great objection to hospitals receiving such assistance It may necessitate a certain amount of supervision or control, possibly through the occasional visit of an inspector or by a representative on the committee of management The amount of assistance would have to be proportionate to the work done and the facilities provided There is no justification for hospitals putting their resources provided as a charity by voluntary subscribers, gratuitously at the disposal of a State or rate paid medical service

Naturally there would be a big increase in hospital expenditure The visiting staff of London hospitals receives no payment or merely a nominal one and is perfectly satisfied to give its expert aid and much time in a charitable cause. But, although it is often assumed that we will continue to give gratuitous services in return for a few gracious words of praise and an occasional title of honour, more often than not granted to some one or other of the less deserving of the profession I think it will soon be realised that it is not charity to give such services to the State.

Recently there has been a striking illustration of the manner in which the medical profession is exploited Although the State is responsible for the health of its officers as well as the rank and file and reserves to its representatives the decision as to the capacity and fitness of the individual, it has accepted through the Red Cross Society and rich civilians the gratuitous services of a large number of our profession for the treatment of these officers And I desire to remark that the treatment of officers on these lines in private houses, more or less suitable, is not, and cannot be, as good as that of the rank and file in the numerous large and well appointed hospitals at their disposal, with the best conveniences for examination and treatment The lack of a resident medical officer, a pathological apparatus and X ray apparatus, not to mention other defects, is a grave drawback It is marvellous that there has been no outcry against a system so unfair to our officers

I think it will be admitted that when valuable aids to the diagnosis and treatment of illness of all descriptions are at the disposal of the present panel patients they will be extended for the benefit of their dependents All those receiving a weekly wage and (or) below the income tax limit, will be included Do you think that the lower middle class will be content to see the bulk of the nation provided with the best possible medical treatment for which *they* are mulcted in high rates and taxes without demanding similar provision on a better scale as to environment, at a higher annual insurance fee? Treatment in a private ward in a properly equipped hospital is obviously much superior to that of any nursing home or private house Hospitals will have to be enlarged to provide special wards for this class —The nation will be divided into the insured and the non insured Possibly the large group of the insured will be treated by State official doctors and the remainder will still exert the right of free choice of doctor and payment for services rendered The State official will be a superior type of Poor law doctor

A State medical service will *not* be economical though perhaps less extravagant than the panel system It is suitable for those under discipline, but we do not want the nation under the heel of medical drill sergeants No doubt there has been immense improvement in the control and prevention of disease by the *medical department of the* Local Government Board And a certain amount of valuable work has been carried out in laboratories in reference to the cause of particular diseases School medical officers have done good work in securing efficient treatment for hundreds of children who *would otherwise* have been neglected But, so far, I have not noticed much evidence of any advance in scientific medicine, though the extension of treatment has been great and beneficial Nor have I observed much original work done by the present State medical service—namely the Poor law doctors

Further encroachment on private practice will ensue from the extension of sanatorium benefit to dependents Wild cat schemes have been mooted Recently it has been suggested that as sanatorium treatment has not produced any marked effect on the prevalence of tuberculosis, it would be better to insist on the wholesale migration of the tuberculous from unhealthy surroundings to properly supervised dwellings in pure air It certainly would be a wholesale migration And yet many develop tuberculosis under such conditions while others sometimes recover though living in a most unfavourable environment

SUGGESTIONS

I hope I have made it clear that our relations with the State and the public are in a state of flux and that it is dependent on individual members of the profession to watch and direct the course of the current Unfortunately we have no representative body which possesses the complete confidence of our profession or the power to enforce its resolutions The British Medical Association diminished its rapidly increasing influence by allowing some members of its council to make use of it for political purposes in connexion with the Insurance Act. At first it was remarkably successful in organising *the profession in opposition to the Bill* on certain lines, but some of its members broke up the concordance by holding meetings in support of the Bill *Incidentally I may remark they remained members of the* Association

Still it is possible for the British Medical Association if managed with greater tact, more tolerantly, and for the benefit of the profession as a whole, rather than for the advancement or advertisement of sections or individuals to obtain and retain a valuable advisory and directing hand in the future *As our only active representative body it should* receive our support, even if we do not invariably agree with its policy in particular cases

I am strongly of the opinion that it is of the utmost importance for medical men to take a greater part in local politics and act as representatives on county councils and other local bodies The selection of candidates for such posts should be made by the various branches of the British Medical Association or at a joint meeting of members and non members But it must be borne in mind that such candidates must have no political axe to grind and that the welfare of the public and the profession is their sole object We do not want a repetition of the scandals in connexion with the appointments at the time the Insurance Act was in the throes of labour Nor do we want representatives who have *retired from* practice through age incompetence or infirmity, for such posts are not those of *otium cum dignitate* Granting efficacious leadership *it will be possible to* develop a medical service suitable to the genius of the nation out of the present state of chaos which I have somewhat inadequately *pictured Above all under proper leadership* it will be possible to put forward practical schemes carefully thought out under medical guidance rather than have to carry out the imperfectly devised experiments to which we and the public are subjected

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THE LATE W A LAUDER SMITH M A M B B C CANTAB —Dr Lauder Smith died recently at his residence Wells Somerset from pneumonia following influenza in his fifty second year The deceased was highly esteemed in Wells where he had several public appointments The chairman of the Wells board of guardians in alluding to the loss the board had sustained by the death of their district medical officer said Dr Smith had lived a beautiful life of self sacrifice and had literally worn himself out for others

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CASES OF CEREBRO-SPINAL FEVER IN THE ROYAL NAVY—AUGUST 1ST, 1915, TO JULY 31ST, 1916

BY H D ROLLESTON, C B, M D CANTAB, F R C P LOND

TEMPORARY SURGEON GENERAL, R.N CONSULTANT PHYSICIAN TO THE ROYAL NAVY ROYAL NAVAL HOSPITAL, HASLAR
SENIOR PHYSICIAN ST GEORGE'S HOSPITAL

(1) *Incidence of the Cases*

DURING the year August 1st 1915 to July 31st, 1916 there were 104 cases of cerebro spinal fever in the Royal Navy, as compared with 170 cases during the first year of the war This fall in the number of cases must be correlated with the contemporaneous fall in the incidence of the disease both in the civil population and also in the Army in this country [1] Although the fall in the general incidence of the disease is probably the main factor in the smaller incidence in the Navy it should be borne in mind that great care has been taken in prophylaxis, and that in the first half of 1916 bacteriological examination of swabs from the throats of new entries was made at Haslar, Chatham, Plymouth, and at Greenwich of non contacts (new entries and drafts for sea) in order to detect "carriers" Out of *10,852* ratings examined *298* or 2 7 per cent, carriers were thus detected and isolated Not only has the incidence been smaller, but it has been less widespread for no case occurred at Blandford Camp or in the Akbar Establishment, in both of which there were a few cases during the first year of the war At the Deal depot which was responsible for 25 cases *during the first year of the war, there were 2 cases only in* the second year No case has occurred during the war at either Osborne or Dartmouth Royal Naval Colleges

The cases occurred in the Plymouth district (28) Portsmouth district (27) Chatham district (18), at Shotley (11) at the Crystal Palace depôt (8), at Deal (2) and 10 cases on sea going ships During the first two years of the war out of 274 cases of cerebro spinal fever in the Navy there were 22, or 8 per cent, with 13 deaths in sea going ships In one ship only was there more than one case (2)

The monthly incidence with the results is shown below As in the first year of the war, the largest number of cases and of deaths occurred in February

		Cases	Deaths		Recoveries
1915	August	4	2 or	50·0 p c	2
	September	4	3	75·0	1
	October	3	1	33 3	2
	November	6	5	83 0	1
	December	8	4	50·0	4
1916	January	8	3	37 5	5
	February	26	7	26 9	19
	March	20	6	30·0	14
	April	7	2	28 5	5
	May	7	0	—	7
	June	3	2	66 7	1
	July	8	2	25·0	6
		104	37		67

Age incidence —Among the 104 cases in the Navy 70, or 67 3 per cent, were under 20 years of age (83 or 79 8 per cent, being under the age of 25 years) and the number of cases progressively diminished in the succeeding decades The percentage of deaths was lower under 20 years than in any of the succeeding decades The average age of the 104 cases was 20 4 years of the fatal cases 22 2 and of the recoveries 19 4 years The extremes of age were 15 and 46 years

Age periods	Number of cases and percentage of the total 104 cases		Deaths and percentage in the age periods	
15 to 19	70 or	67 3 p c	20 or	28 5 p c
20 29	24	23 1	12	50·0
30 39	6	5 8	2	33 3
40 49	4	3 8	3	75 0
	104		37	

* The case which recovered was invalided and died suddenly six months later the coroner's inquest finding pneumonia as the cause of death

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[1] For this information I am indebted to Surgeon [illegible] [illegible] H A C

In the first year of the war 60 6 per cent of the cases were under 20 years of age

Mortality —Out of the 104 cases 37, or 35 6 per cent, proved fatal; this contrasts favourably with the mortality of 90, or 52 9 per cent, among the 170 cases during the first year of the war

Ranks and ratings —There were two officers—a midshipman Royal Naval Reserve (aged 18) and a surgeon probationer (aged 21) who both recovered The 102 ratings were as follows Boys (seamen class) 39 (7 deaths), seamen 22 (11 deaths), stokers 13 (6 deaths), marines 11 (3 deaths) engine room artificers 5 (2 deaths), officers' stewards 3 (all fatal, average age 20 years), carpenter's crew 2 (1 death), boy servants 2 (1 death), cook's mate 1 (recovery), plumber's mate 1 (recovery), armourer's crew wireman 1 (fatal), trimmer 1 (recovery), boy artificer 1 (fatal)

(2) *Remarks on Some Clinical Aspects*

Onset —The mode of onset sometimes varied from the common form characterised by fever malaise, headache and vomiting Eight patients when first discovered were in an unconscious condition, and 3 of these had fallen out of their hammocks, one of these, with a graze on the forehead, blood about the nostrils, and vomiting was regarded for some days as a case of fractured base Of the 8 cases with this apoplectiform onset, 4 proved fatal In 4 cases in February respiratory symptoms were so well marked as to suggest pneumonia or acute bronchitis In 1 case the prominence of abdominal symptoms gave rise to an initial diagnosis of appendicitis

In 11 cases at least the disease began very shortly (within three days) after going on leave (6 cases) or returning from leave (5 cases) and in some instances considerable fatigue must have been entailed by the length of the journeys In one instance the disease appeared three days after arriving on leave at Gosport from the Grand Fleet In the 5 cases in which the disease appeared shortly after returning from leave the question of infection when on leave arises In 13 cases the disease occurred within three weeks of joining the Service and exposure to the trials incident to this change of life In 3 cases the disease followed the onset of measles after an interval of about ten days As these cases were already under observation in hospital it is improbable that the initial mottled rash of cerebro-spinal fever was regarded as measles In two other cases the disease attacked patients already in hospital for a lacerated finger and pleurisy respectively In 5 cases (4 fatal) meningitis, in which the cerebro-spinal fluid was proved bacteriologically to contain meningococci supervened on otitis In isolated instances drunkenness and head injury (1 case), influenza and vaccination (4 cases) immediately preceded the onset In 1 case pneumonia and cerebro-spinal fever co-existed These various factors may have so reduced the bodily resistance as to enable saprophytic meningococci in the naso pharynx to invade the system

Rashes were recorded in 51 or 49 per cent, out of the 104 cases, in 41 cases the rash was petechial or hæmorrhagic and 15 or 36 6 per cent, of these proved fatal a mortality percentage very little higher than that (35·6) of all the 104 cases In 1 case with a petechial eruption hæmorrhagic bullæ appeared on the ankles four days after the rash In 5 cases there was a macular rash with 1 death and in 5 cases a rose rash with 1 death The mortality of the 51 cases with rashes was therefore 17, or 33 3 per cent.—namely slightly lower than the mortality of the total 104 cases In the first year of the war, rashes occurred in 102, or 62 6 per cent, of 163 cases and the mortality of the cases with rashes was 52 (51 per cent) or a little lower than that (52 9) of the total 170 cases Although a very profuse hæmorrhagic rash is extremely ominous the occurrence of a rash is not necessarily of grave significance The rash was nearly always noticed on the first or second day of the disease

Herpes was noted in 21 or 20 2 per cent. of the 104 cases, in 20 cases the herpes was on the lips, in the remaining case it was in the distribution of the nasal branch of the ophthalmic division of the fifth nerve but the cornea was not affected. In one of the cases with labial herpes there was also cervical herpes. In 14 cases there was also an initial rash, in 2 cases the rash and the labial herpes both occurred on the second day of the disease, in the remaining cases the herpes appeared later than the rash, on an average on the fourth day of the disease, the extremes being the second and the eighth days In some instances the labial herpes was very profuse Of the 21 cases 4, or 19 per cent, proved fatal, this mortality is rather more than half that (35 6 per cent) of the total 104 cases, and thus agrees with the ancient belief that herpes in cerebro spinal fever, as in pneumonia, is a good prognostic In the previous year herpes labialis was noted in 35, or 21 5 per cent, of 163 cases—almost exactly the same proportion as in the present series

Rarer manifestations and complications —Ocular symptoms Photophobia, which has been stated to be rare,[2] was noted in 10 cases, conjunctivitis in 5, conjunctival hæmorrhage in 2 panophthalmitis with loss of an eye in 2, strabismus in 8 (5 fatal), ptosis in 3 (2 fatal), nystagmus on the second day in 1 (fatal), and von Gräfe's sign in 1 Hemiplegia occurred in 1 case and weakness of the arm in another case both of these were fatal, facial paralysis in 1 (fatal), dysarthria in 1 (recovery), and dysphagia in 1 (recovery) Delirium tremens occurred in 2 cases (1 fatal) Pericarditis was noted in 2 cases, both of which recovered Recent endocarditis was found after death in 1 case (*vide infra*) and transient systolic murmurs were heard in 4 cases which recovered Status lymphaticus was found after death in 1 case. Hæmaturia due to hæmorrhagic cystitis and pyelitis was seen in 1 case, and 1 patient had polyuria for a few days passing 8 6 and 4 pints of urine daily, while the temperature was about 103° F Epididymitis without any evidence of gonorrhœa occurred once

Synovitis was noted in 4 cases (2 fatal) on the second, fifth, fifth, and sixth days of the disease, in 2 cases the knee was affected, in 1 the ankles and wrists and in 1 the interphalangeal joint of a finger All the cases had a petechial or hæmorrhagic eruption, this fits in with the view that when purpura and synovitis are associated, the latter is due to hæmorrhages into the synovial membrane In the case with arthritis of the wrists and ankles on the fifth day of the disease, pericarditis with synovitis of the wrists ankles, and knees developed on the ninth day, in spite of delirium tremens recovery followed In the first year of the war there were 8 cases (2 fatal) of arthritis Acute otitis supervened in 2 cases both of which recovered

Relapses during treatment are said not to be uncommon and generally to occur in cases of chronic hydrocephalus which terminate fatally There was one case proved to be of this nature in a man, aged 19, the relapse which started after nine days of convalescence being ushered in by a rigor In one case a true relapse or brief second attack occurred seven weeks after the temperature had been normal, and was followed by recovery (*vide infra*)

Mixed infections of the cerebro-spinal fluid were reported in 3 cases, pneumococci in 1 case without any obvious focus, and streptococci in 2 cases (one an otitic case, in the other infection occurred through the lumbar puncture)

Diagnosis —Only those cases in which meningococci were found in the cerebro-spinal fluid have been accepted as cerebro-spinal fever This criterion has very probably led to the rejection of some genuine cases of cerebro spinal fever But no clinical manifestation is pathognomonic of the disease Thus a hæmorrhagic rash, though highly suggestive was present in cases proved bacteriologically to be due to other infections, such as pneumococci, or to be free from micro-organisms The latter group of cases, though unsatisfactory, must be recognised.[3]

A fulminating case of meningitis with a profuse hæmorrhagic rash occurred on Nov 7th, 1915, in a cadet at Dartmouth Bacteriological examination of the cerebro-spinal fluid, which was almost clear and contained a few red blood cells and occasional polymorphonuclear leucocytes, by Fleet-Surgeon H C Whiteside, R.N, failed to show any micro-organisms, the cultures were sterile, and no carriers were detected among 30 contacts There was no necropsy A brother died in infancy from meningitis believed to be tuberculous

Cases with meningeal symptoms, which showed meningococci in the naso-pharynx but not in the cerebro-spinal fluid have been ruled out, as they may have been meningococcic carriers with meningism due to some other cause In this connexion it may be pointed out that during the acute stage of cerebro spinal fever swabs from the naso pharynx are often negative Out of 33 cases of bacteriologically proved cerebro spinal fever meningococci were found in the naso pharynx in 7 or 21 3 per cent only This corresponds with von Lingelsheim s figures of 635 cases of cerebro-spinal fever with 146, or 22 per cent positive cultivations from the naso pharynx [4]

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[2] Foster and Gaskell Cerebro-spinal Fever p 37 1916 Cambridge

[3] Among 121 cerebro-spinal fluids from cases of meningitis in the French Army Sacquépée Burnet and Weissenbach (Bull Acad de Méd., Par 1915, lxxiv 103–105) found 6 with the features of Widal's puriform aseptic meningitis" in which no micro-organisms could be found by direct examination or cultivation.

Cerebral symptoms (meningism) accompanying acute infections, such as influenza pneumonia, enteric, otitis malaria, may closely imitate cerebro spinal fever, and a certain diagnosis can be made only by lumbar puncture and examination of the cerebro spinal fluid Even if a patient has signs of pneumonia it is possible, as shown by isolated cases in both the recent epidemics in the Navy, that there is meningococcic meningitis as well

From other forms of meningitis lumbar puncture and examination of the cerebro spinal fluid constitute again the most reliable method of diagnosis Even with pre existing otitis it does not necessarily follow that meningococcic meningitis can be excluded, for as mentioned above in 5 cases (4 fatal) meningitis, in which the cerebro spinal fluid was proved bacteriologically to contain meningococci, supervened on otitis

Difficulty might arise in the diagnosis from the meningitic form of acute poliomyelitis in which all the symptoms of meningitis may be present, but "on lumbar puncture the cerebro-spinal fluid escapes under pressure, is clear and on cytological examination may be found to contain an increased number of lymphocytes with a normal or sometimes a diminished sugar reaction and an increased amount of albumin" (Batten [5]) An outbreak in Devonshire and Cornwall in 1911 of what was at first thought to be cerebro spinal fever was shown by R J Reece [6] to be one of acute poliomyelitis and not one of acute poliomyelitis occurring concurrently with cerebro spinal fever In July 1916 there was at Shotley an outbreak of 15 cases with the clinical symptoms of cerebro spinal fever [7] but 4 only were proved to be of this nature Among the remaining 11 cases there was one only which could possibly be regarded as an example of the meningitic form of acute poliomyelitis

In acute osteomyelitis of the spine lumbar puncture may give exit to pus from the extradural space This occurred in 2 cases in the Royal Navy which will subsequently be published In neither of these were there definite symptoms of cerebro-spinal fever but Grisel [8] in a review of this form of osteomyelitis states that although in some cases the symptoms of compression are quite definite and disappear when the abscess is evacuated there are others in which the association with meningitic symptoms and septicæmia renders the diagnosis very difficult

The sequence of events in the two following cases is perhaps, worthy of brief mention

Two brothers from the Fair Isle Shetland had measles in September, 1915 in Haslar One developed cerebro spinal fever 13 days after the onset of measles and died The other who had never been well since the attack of measles died in Haslar three months later from tuberculous meningitis In both cases a post mortem examination was made

(3) *Summary of the Results of Treatment*

Two out of the 104 cases were discovered after death only and therefore were not treated for the disease, 1 case (fatal) received soamin only, and 6 cases of which 4 or 66 7 per cent proved fatal had lumbar puncture only Therefore, out of 9 cases which did not receive serum 7 or 77 8 per cent proved fatal

Among the 95 cases treated by some form of serum the mortality was 30 or 31 6 per cent This result which is in striking contrast to the results of serum treatment in the first year of the war—105 cases with a mortality of 64 or 61 per cent—fully justifies the serum treatment of the disease and is compatible with the widely expressed view that the serums employed in this country during the first year of the war were largely deficient in antibodies Flexner s serum, made under his direction at the Rockefeller Institute New York, was not available during the first year of the war, but after the failure in this country of anti meningococcic serum in the epidemic of 1915 the Rockefeller Institute reverted to the manufacture of the serum, and most generously placed a supply of a multivalent serum, made from 32 strains at the disposal of the Royal Navy [9] Other serums employed during this year, and not in the previous year, are Colonel Mervyn Gordon s various serums and the Pasteur Institute s multivalent serum In the early part of the second year of the war when the new serums were not available, Mulford s serum was given in a number of the cases and throughout the year use was also made of the Lister Institute serum and of Burroughs Wellcome and Co s serum

Of the 95 treated with intrathecal injections of serum 60 did not receive any other form of specific treatment, and had a mortality of 18 or 30 per cent, which is a little lower than that (31 6) of the 95 cases The remaining 35 cases received in addition one or more of the following forms of treatment hypodermic or intramuscular injection of the serum, of vaccines or of soamin or hexamine by the mouth with a mortality of 12 or 34 3 per cent In 23 out of the 35 cases the additional treatment was the simultaneous subcutaneous (or in a few instances intramuscular) injection of serum, this method was mainly adopted at Plymouth and Haslar, the mortality was 7, or 30 4 per cent Vaccines were given in 8 cases, but did not appear except perhaps in one or two instances to exert any decided beneficial effect The exact figures of the results of treatment are shown in the tabular form below —

Tabular Summary of Treatment

—	Cases	Deaths		Recoveries	
			Per cent		Per cent
Antimeningococcic serum— Intrathecally	95	30 or	31 6	65 or	68 4
Alone	60	18	30	42	70
Combined with serum hypodermically vaccines soamin or hexamine	35	12	34 3	23	65 7
Combined with serum hypodermically	23	7	30 4	16	69 6
Combined with vaccine	4	3	75	1	25
Combined with vaccine soamin and hexamine	1	—		1	
Combined with vaccine and hexamine	3	1		2	
Combined with soamin	2	1		1	
Combined with hexamine	2	—		2	
Vaccines— (Never alone always with intrathecal injection of serum) vide above	8	4		4	
Hexamine— Alone	1	1		—	
Combined with intrathecal injections of serum Nec vide above	6	1		5	
Soamin— Alone	1	1		—	
Combined with intrathecal injections of serum Nec vide above	3	1		2	
Lumbar puncture only	6	4	66 7	2	33 3
Symptomatic treatment only	2	[illegible]		—	

More than three quarters of the 95 cases received serum within the first three days of the disease From tabulation of 1211 cases Flexner found that when the serum was given within the first three days the mortality rate was 18 per cent when between the fourth and seventh days 27 3 per cent and when later than the seventh day 36 5 per cent and therefore laid stress on the importance of early injection In the 95 cases treated with serum in the Royal Navy the influence of time can also be seen —

	Cases	Deaths	Recoveries
1st to 3rd day	[illegible]	22 or 29 7 p c	52 or 70 3 p c
4th to 7th day	1[illegible]	5 33 3	10 66 7
Later than the 7th	6	3 [illegible]	3 [illegible]
	[illegible]	30 31	6[illegible]

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[4] Quoted in the Report of the Special Advisory Committee upon Bacteriological Studies of Cerebro spinal Fever during the Epidemic of 1915 p 3[illegible]

[5] Batten F E Acute Poliomyelitis p [illegible] 1916 John Bale Sons and Danielsson London

[6] Reece R J Report of the Medical Officer of the Local Government Board 1911 12 Appendix A No [illegible] p 5[illegible] 1913

[7] Fleet Surgeon T D Halahan has recently published (THE LANCET 1916, ii 1102) the details of these and some additional cases and urges that they were cerebro spinal fever

[8] [illegible] d'Orthop Paris 1911 3 [illegible] ii 1 2 I am indebted to Temporary Surgeon L. Pearce Gould M D F R C S R N for this reference

[9] [illegible] Antimeningitis Serum Journ Roy [illegible] vol [illegible]

The results obtained by the use of the various brands of serum are shown below in a tabular statement Flexner's serum was employed in 39 cases altogether, with a mortality of 9, or 23 per cent , in 27 of the 39 cases it was the only serum used, with a mortality of 6, or 22 per cent , the 12 other cases in which other serums were given as well showed a mortality of 3 or 25 per cent The other serums were given in much fewer cases The mortality percentage of the 14 cases that received Burroughs Wellcome and Co 's brand (alone or combined with other serums) was slightly lower than that of the cases treated with Flexner's serum , and the 16 cases treated by Gordon's various serums alone showed an even lower mortality,

Table showing Results of Treatment by Different Serums

—	Cases	Deaths	Recoveries
		Per cent	Per cent
Flexner's serum alone	27	6 or 22·3	21 or 77 7
Combined with other serums	12	3 25	9 75
	39	9 or 23	30 or 77
Gordon's serums alone ..	16	3 or 18 7	13 or 81 3
Combined with other serums ..	6	3 50	3 50
	22	6 or 27 3	16 or 72 7
Pasteur Institute's multivalent serum (3619) alone	9	4 or 44 5	5 or 55 5
Combined with other serums	5	1 20	4 80
	14	5 or 35 7	9 or 64 3
Burroughs Wellcome & Co 's serum alone	6	2 or 33 3	4 or 66 7
Combined with other serums	8	1 12·5	7 87 5
	14	3 or 21 4	11 or 78 5
Mulford's serum alone ..	10	5 or 50	5 or 50
Combined with other serums	2	1	1
	12	6	6
Lister Institute's multivalent serum alone ..	11	6 or 54 5	5 or 45 5

The number of occasions on which serum was given intrathecally varied in the 95 cases from 1 to 8 according to the duration of the symptoms In some instances the improvement and fall of temperature after the injection of serum were dramatic.

Sixteen cases received one dose only, and 7 proved fatal, 6 being very acute or fulminating cases, 25 received two doses of serum (8 deaths), 22 cases three doses (7 deaths), 8 cases four doses (1 death), 11 cases five doses (4 deaths), 5 cases six doses (2 deaths), 4 cases seven doses (1 death), and 4 cases eight doses (no death) In many cases lumbar puncture was performed more often than serum was injected, in 1 chronic case in which serum was given six times, lumbar puncture was performed on 20 occasions

Serum rashes, erythematous or urticarial were mentioned in 22 or 23 per cent., of the 95 cases treated by serum but may have been more frequent The rashes and articular manifestations were practically confined to cases treated with Flexner's and Burroughs Wellcome and Co 's brands

Out of the 22 cases 21 received either Flexner's or Burroughs Wellcome and Co 's serum, 12 had Flexner's serum alone, 2 Flexner's and Gordon's serum, 1 Flexner's and the Pasteur Institute's multivalent serums 2 Burroughs Wellcome and Co 's serum alone, 1 Burroughs Wellcome and Co 's and Gordon's serums, and 3 Flexner's and Burroughs Wellcome and Co 's serum (only 4 cases had this combination) The remaining case had 70 c c of Gordon's serum, and did not have any manifestations of serum disease except the rash Out of the 95 cases treated with serum, 41 had Flexner's or Burroughs Wellcome and Co 's serum, and among them rashes occurred in 21 or 51 per cent , whereas among the remaining 54 cases treated by serum there was a rash in one case only Six of the 22 cases with rashes also had serum hypodermically The average amount of serum received by the cases with rashes was 65 c c , and the average amount received by 14 other cases which had Flexner's or Burroughs Wellcome and Co 's serum and recovered was 70 c c , or practically the same

On an average the rash appeared ten days after the first injection of serum In a case at Haslar which received one injection of 20 c c of Flexner's serum in a relapse seven weeks after the primary attack in Egypt, there was within a few hours an ' immediate ' serum rash The patient stated that nine lumbar punctures had been performed in the primary attack, but there is no official information as to the administration of serum

Of the 22 cases none proved fatal, but as the serum rash occurs after an interval of about ten days, the fulminating and acute cases are obviously excluded, and this observation has no prognostic value Six cases had both herpes and a serum rash , 9 cases an initial rash and a serum rash , and 3 cases an initial rash, herpes and a serum rash (in one case on two occasions), presumably in these instances the skin was especially prone to react

In some cases pains in the joints without effusion accompanied the serum rash, and in two instances effusion into the joints and a temperature of 102° coincided with the rash In 2 cases at Chatham temporary deafness occurred at the same time as a serum rash and arthralgia, and was regarded by Temporary Surgeon A C McAllister as a manifestation of serum disease

Grave accidents due to intrathecal injection of antimeningococcic serum were very rare

In one case lumbar puncture was done directly after admission to the Royal Naval Hospital, Plymouth and 50 c c of turbid fluid containing meningococci spurted out, 15 c c of Gordon's multivalent serum was given intrathecally and the same quantity hypodermically Respiration stopped at once The necropsy showed fibrinous adhesions and purulent streaks over the cerebral sulci, with but little exudation at the base of the brain Both lateral ventricles were distended with blood stained serum The purulent exudate over the hemispheres suggested that the illness had last a week In another case at Plymouth lumbar puncture on the third day of the disease gave exit to 30 c c of turbid fluid, and 15 c c of Gordon's multivalent serum were injected intrathecally , five hours later respiration stopped before the pulse The necropsy showed fibrinopurulent exudate over the base of the brain and much yellowish fibrin over the pons and medulla, turbid and blood stained fluid in both ventricles, œdema of the cerebellum pressing on the pons, dilatation of the right side of the heart, and recent and old endocarditis of the mitral valve Although death did not occur until five hours after the injection of serum, this case resembles the first in the presence of blood stained fluid in the lateral ventricles of the brain In a third case death occurred suddenly seven hours after injection of serum and the necropsy showed distension of the lateral ventricles and acute congestion and œdema of the cerebellum pressing on the pons

In a man who had had six lumbar punctures the site of the punctures became inflamed and death rapidly followed , at the necropsy it was found that the lateral ventricles were greatly distended with pus swarming with streptococci

In 2 cases lumbar puncture gave rise repeatedly to severe headache, which was partially relieved when serum was injected intrathecally

FOUR CASES OF HEMIPLEGIA CAUSED BY EMBOLISM FOLLOWING GUNSHOT WOUNDS OF THE CAROTID ARTERIES

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A SERIES of 14 cases has recently been reported by Sir George Makins[1] in which symptoms of cerebral embolism followed gunshot injury of the carotid arteries Of these cases only one ended fatally, and in it a post-mortem examination was not available, so that a complete anatomical account of the conditions could not be obtained Four similar cases, presenting the remarkable clinical picture of a wound in the neck accompanied by hemiplegia and loss of consciousness, and all ending fatally, have come under observation in a casualty clearing station As a necropsy was performed in every case they appear worthy of record

CASE 1 —In this case there was a small wound on the left side of the neck, below and behind the angle of the jaw , the exit wound was also on the left side, lower down, about 1¾ inches from the middle line behind An extensive diffuse swelling appeared behind the angle of the jaw , this

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[1] The Lancet 1916 ii 543

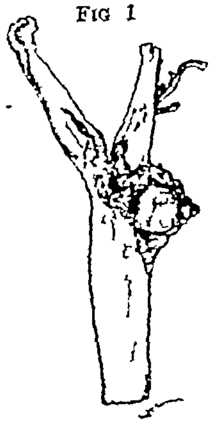
swelling did not pulsate, nor was there any *bruit* The patient was unconscious and stertorous, and there was hemiplegia affecting the face, arm, and leg on the right side The patient died about 26 hours after being wounded

On dissection of the left side *of the neck there* was noted a localised swelling with hæmorrhage, on the walls of the external and internal carotid arteries, just above the bifurcation of the common trunk Two small wounds, with ragged edges, were present, *one on the front* of the external and the other on the back of *the internal artery*, *these appeared to* be sealed up by firm red thrombus which was *entangled* in projecting shreds of the adventitial tunics, and the thrombus on the back of the inner vessel exhibited a firm pea like projection backwards A probe which was readily passed, with light pressure, in at one opening and out at the other evidently traversed the lumina of both arteries The vessels were *removed* unopened, the internal carotid being cut across half an inch *from the base of* the skull Its lumen was patent at that level, *but* was filled by thrombus *to a* point just below When fluid was poured into the common carotid artery it was observed to make its exit by the external artery, none escaping by the wounds *The lumen of* the left internal carotid artery was observed to be patent also at the *point* where it was cut in removing the brain The *left* middle cerebral vessel was normal to a point just *beyond the origin of its perforating branches*, but was there distended and completely blocked by a red adherent thrombus The *Bacillus perfringens* was present in this clot in considerable numbers There was a well marked condition of early softening of the left hemisphere of the brain, excepting the occipital and frontal lobes The basal nuclei were normal

CASE 2—In the second case there were multiple small bomb wounds, one of which was on the right side of the *neck* posteriorly There was a similar non pulsatile swelling of the neck, and the symptoms produced were similar *to those in the first case* The patient died, hemiplegic *on the left side about* 18 hours after being hit

On post mortem examination much effused blood was present in the tissues of the right side of the neck The missile, a small *fragment of* bomb-casing, was seen lying under the right sterno thyroid muscle having penetrated the right lobe of the thyroid gland *There* was a *false* aneurysm, about an inch in diameter, on the deep internal aspect of the right common carotid artery, its wall was *formed of firm fibrin* mixed with blood corpuscles On slitting up the *vessel after* removal, a linear wound, ⅝ inch in length, was seen on its posterior and inner wall about 1½ inches below the bifurcation A firm cylindrical thrombus was adherent to the upper end of this wound and extended upwards for a distance of 1¼ inches, lying free in the lumen and *only* partially filling it The *external and* internal carotids were free of thrombus as far as they could be traced in the neck, and the latter was patent also at the point where it was cut inside the skull in removing the brain The right Sylvian artery was completely occluded by firm red thrombus just beyond the origin of its perforating branches The right hemisphere of the brain showed well marked early softening, with the exception of the frontal and occipital poles The grey matter was swollen, red and œdematous and had a blurred margin, and contrasted with the normal left side The basal nuclei were intact

FIG 1

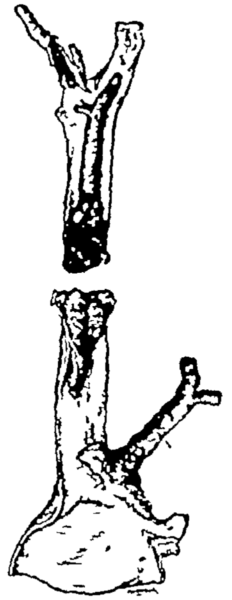


The carotid arteries from Case 3, showing the false aneurysm and the thrombi inside the vessels The perforation in the wall of the external carotid is quite obscured by thrombus

CASE 3—This case was admitted within six hours of being wounded with the same symptoms of stertor and hemiplegia The patient had been shot through the neck from side to side On the right side there was a small wound near the posterior border of the sterno-mastoid muscle, about midway between its attachments Arterial blood escaped freely from this wound when the dressing was removed The right common carotid was therefore ligatured just above the omo hyoid, the hæmorrhage was thereby arrested The patient died without any alteration in the symptoms within 15 hours of being wounded

In this case a false aneurysm about the size of a walnut was found on the back of the right external carotid artery just above the bifurcation of the main trunk (Fig 1) A small perforation about ⅛ inch in diameter was present in the posterior wall of the vessel at that level The edges of this wound were ragged and bruised, and the opening was crossed by some residual strands of adventitia with clot adherent to them The posterior wall of the internal carotid artery was much bruised at a slightly lower level but was not *perforated* *Fairly firm greyish pink thrombus* was adherent on the walls of the common carotid artery at its bifurcation, and extended ½ inch upwards in the lumen of the internal and 1¼ inches in that of the external vessel being firmly attached over the bruised areas of intima. The external carotid was the only vessel completely occluded by thrombus Emboli were present in several branches of this vessel in the neck, the lumen of the internal carotid was free of clot from just above the injury on its wall to its termination inside the skull The right middle cerebral vessel was normal at its origin, but all the larger branches in the Sylvian fissure were filled by portions of thrombus of the same consistence as that seen in the large vessels in the neck The island of Reil and the motor area of the right cerebral hemisphere were softened and much congested, while the basal nuclei and the poles of the hemisphere remained normal A few streptococci were present in films from the thrombi, and a few colonies were obtained on cultivation

FIG 2



Illustrates the complete separation of the common carotid artery and the sealing of the ends by thrombus The shape and arrangement of the thrombi indicate that they have formed while the blood was still circulating

CASE 4—This case was admitted about six hours after being wounded, already in the same condition, stertorous, and with hemiplegia affecting the face, arm, and leg on the right side There was a wound on the left side of the neck about 2½ inches above the clavicle This patient survived for about *72 hours* after being wounded

Post mortem the left common carotid artery was found to be completely severed and the ends, filled with thrombus were retracted so as to leave a gap half an inch in length (Fig 2) The ends of the vessel were much bruised and some laceration was present for half an inch upwards on the walls of the upper segment The thrombus in the lower segment was traced downwards to within an inch of the aorta, that in the upper extended up to the bifurcation of the common carotid, and thence for a considerable distance into the external carotid and its branches and for half an inch only into the internal carotid The lumen of the latter vessel was patent above that level On the base of the brain the left Sylvian artery was plugged by firm red thrombus beyond the origins of the perforating branches This had given rise to cerebral softening, as in the previous cases

In each of these cases the hemiplegia and cerebral disturbance were caused by occlusion of the middle cerebral artery or its branches In all four there was thrombus present in the carotid arteries in the neck, consequent on damage of the arterial walls and in each there were several inches of the internal carotid artery patent between that thrombus and the portion blocking the cerebral vessel It is consequently a justifiable conclusion that the blood continued to flow for a time at least in the wounded vessels and that the occlusion of the cerebral arteries occurred by embolism Similar emboli were found in one instance in the branches of the external carotid also

The damage to the large cervical arteries was in every case considerable In three there was actual perforation of the wall, in the fourth the trunk was found completely severed but this no doubt occurred secondarily by sloughing after the vessel was fully thrombosed It is remarkable that hæmorrhage was so slight in these cases, in only one of them was ligature necessary

Sir George Makins draws attention to the tardy development and partial nature of the paresis as outstanding features in his series, and contrasts this with the prompt and complete hemiplegia, followed by a fatal issue in 24 to 36 hours which may occur after ligature of the common carotid artery In the four cases related, however, the early appearance and completeness of the hemiplegia and the rapidly fatal issue resemble the effects of ligature of the common carotid It is natural that such cases, only surviving from 15 to 72 hours, would not reach a base hospital

We are indebted to the Medical Research Committee for permission to make use of the two drawings by Mr A K. Maxwell

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ON THE PRESENCE OF AN ACCESSORY FOOD FACTOR IN THE NASAL SECRETION

AND ITS ACTION ON THE GROWTH OF THE MENINGOCOCCUS AND OTHER PATHOGENIC BACTERIA

(*Preliminary Paper*)

BY CRESSWELL SHEARER, M D, F R S,
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(*Report to the Medical Research Committee*)

1 *Introduction*

IN dealing with numbers of cerebro-spinal fever contacts during the recent epidemic it was noticed that the growth of the meningococcus was in some instances strongly influenced by the amount of nasal secretion transferred by the swab to the surface of the culture medium. It was found from experiment that if a trace of dilute sterile nasal secretion was added to the surface of the culture medium, it brought about a rapid growth of the meningococcus when this medium was subsequently inoculated with this germ The growth is always many times the amount obtained on the same medium, on planting out a similar quantity of culture, in the absence of nasal secretion [1]

The action of sterile dilute nasal secretion in accelerating the growth of the meningococcus would seem to be entirely in the nature of an accessory food body or vitamine as alone this secretion is quite incapable of supporting or stimulating the growth of this germ This conclusion is supported by its peculiar properties It is soluble in water, slightly soluble in alcohol, and almost insoluble in ether [2] It has great heat-resisting capacity, withstanding autoclaving at 120° C and boiling in strong hydrochloric acid for 12 hours without losing strength On filtration it always undergoes considerable adsorption, even when passed through an ordinary filter paper, and it almost entirely disappears from any fluid when this is passed through a Doulton filter candle All chemical manipulation, drying, precipitation, &c. appreciably weaken its power of stimulating the growth of the meningococcus

In addition to the meningococcus and its allies it has been shown to accelerate the growth of the pneumococcus *B typhosus*, *B coli communis*, various fæcal streptococci, and a number of throat bacteria. It is highly probable that it will accelerate the growth of all pathogenic bacteria when added in sterile fashion to any suitable culture material, whether solid or fluid [3]

2 *Mode of Collection of Nasal Secretion*

The nasal secretion used in the following experiments was obtained either by collection direct from the naso pharynx by means of a suction pump, or by the employment of naso-pharyngeal swabs such as those used in the routine swabbing of cerebro-spinal fever contacts. This latter method proved the most convenient These swabs are made of ether washed cotton wool placed on the ends of flexible wires which are introduced into the naso pharyngeal region through the mouth retracted within bent glass tubes, so that all contamination from the oral secretion is avoided The swabs were then extracted in distilled water It was found that quite a considerable amount of secretion could be obtained in this way This will be referred to in the following experiments as "dilute" nasal secretion in distinction to that collected "undilute" direct from the mucous membrane of the naso-pharynx, by means of the pump

3 *The Preparation of Various Extracts of Nasal Secretion* [4]

(*a*) General treatment in the preparation of aqueous, alcoholic and ethereal extracts. The cotton-wool was removed from the swab wires and covered with the solvent in glass stoppered specimen tubes of suitable size, using 1–2 c c for each swab After standing for 24 to 48 hours, the liquid was removed with a pipette and filtered through a 5 c c Swedish acid extracted filter paper Aqueous extracts which were further treated, and all alcoholic and ethereal extracts, were evaporated to dryness on a tepid water bath at a temperature of about 60° C, the basin being removed before it was absolutely dry when water was the solvent, and then taken up in distilled water, 1 c c of water being allowed for each swab extracted

(*b*) Preparation of hydrolysed nasal secretion 3 c c of undilute nasal slime was heated with ten times its volume of strong HCl in a test-tube standing in boiling water for six hours More HCl was added to make up for the loss by evaporation, and the heating continued for six hours more The solution, which was faintly yellow, was transferred to a porcelain dish and the excess of acid was evaporated off on the water bath with the continual addition of water When nearly all the acid had been removed the remainder was dried at a low temperature, dissolved in 7 c.c. of water, and made faintly alkaline to litmus paper with N/10 NaOH, about 5 c c being necessary

All the extracts before being sealed up in vaccine tubes were tested and their alkalinity adjusted as closely as possible to Ph = 7 35 of Sorensen's scale The extracts after being sealed up were finally sterilised at 55° C for an hour All manipulation of the extract was conducted in beakers of Jena glass, or Berlin porcelain or platinum, and great care was taken to have all glassware, especially the slides used for mixing the dilutions clean and free from any chemicals The distilled water used was redistilled from glass several times

4 *Method of Testing the Action of Extracts*

The action of the various extracts of nasal secretion in stimulating the growth of the meningococcus and other bacteria was tested by making a number of dilutions of the germ in the extract and planting out each dilution separately and comparing their growth, with a similar quantity of the same emulsion diluted in a similar manner in distilled water or Ringer's solution, and planted out in the same way It was found after several trials that distilled water offered the best form of control In the following experiments care was always taken to make the control dilution first and to plant it out immediately Thus all harmful action of distilled water on the germ was minimised as much as possible [5] Where typhoid and coli organisms were used all emulsions and controls were made in Ringer's solution

A large number of methods of dilution were tried. The one found most useful consisted in taking up in a calibrated pipette, finely throttled to ensure accurate measurement, nine volumes of the fluid to be tested, each volume representing 25 c.mm. of liquid They were then spread out separately on sterile slides Then with a smaller pipette, also throttled, 5 c mm of a standard emulsion [6] of the meningococcus (5000 million to the c c.) in Ringer's solution, was drawn up This was added to the first of the 25 c mm volumes on the slide and thoroughly mixed by drawing it up to a fixed mark each time in the process of mixing Then from this 5 c mm was taken up and transferred to the second 25 c mm volume and the mixing repeated This procedure was gone through in succession with each of the nine volumes Thus in the end a series of nine successive dilutions of the germ were obtained Then by means of a fine sterile camel hair brush or fine capillary tube, a certain quantity of each dilution was transferred in turn to the surface of the culture medium, commencing with the highest and gradually working down to the lowest dilution The quantity transferred could be accurately measured when a capillary tube was used, but when a brush was employed it was only roughly the same in each instance The dilutions were spread on the surface of the culture medium by dipping the brush in one of them and then drawing it rapidly across the surface of the plate This operation was repeated in turn with each of the dilutions Thus a series of nine parallel lines were obtained on the plate, each representing a particular dilution of the germ in the solution to be tested[*]

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[1] If sterile dilute nasal secretion be tested against the action of sterile dilute oral saliva in stimulating the growth of the meningococcus, it will be found that oral secretion has also some power in this respect, but this is much less than with nasal secretion Gordon has shown (Brit Med Jour June 17th 1916, p 849) that in the unsterile state oral saliva has a marked inhibiting action on the growth of this germ When the various mouth bacteria were removed from this secretion by sterilisation or the centrifuge this inhibiting action immediately disappeared

[2] It can be precipitated with phosphotungstic acid and neutral lead acetate but this needs further confirmation

[3] In the experiments described in the present paper the medium used is Crowe's "chocolate medium" (see THE LANCET Nov 20th 1915) In other experiments similar results have been obtained with Gordon's legumen trypagar

[4] For the proper preparation of the extracts the Medical Research Committee have kindly placed the services of Mr D Matthews at my disposal

[5] I have shown elsewhere (THE LANCET 1916, ii 902) that the meningococcus is peculiarly resistant to the hypotonic action of distilled water I have shown that it can withstand its action for many hours without experiencing any apparent ill-effect.

[6] In speaking of a "standard emulsion" of the meningococcus in the following experiments it will always be understood that one in Ringer's solution of the strength of 5 000 000,000 cocci to the cubic centimetre is meant

5 *Experiments*

Experiment I[†] (Figs 1 and 2) —A "standard" emulsion of an old laboratory culture of meningococcus (Littledale) was made up in Ringer's solution 5 c mm of this emulsion was added to 25 c mm of distilled water and of an aqueous extract (see under Sec 3*a*) of dilute nasal secretion respectively, and diluted down through nine successive dilutions, and planted out by means of a brush as described under Sec 4 Thus nine parallel lines, as shown in Figs 1 and 2 were obtained on the plates,[‡] one representing the dilution in nasal secretion extract and the other the control dilution in distilled water Line No 1 contains the fewest number of germs while line 9 contains the largest number Each line contains very roughly the same number of germs as the corresponding line on the other plate The plates were incubated at 37° C for 24 hours and then taken out and the resulting growth photographed The photographs show the plates reduced to half natural size

In Fig 1 showing the dilution in distilled water, little growth has taken place except on lines 7 8, and 9 In the same degree of dilution in aqueous extract of dilute nasal secretion Fig 2, considerable growth has taken place on all the lines and is confluent in the case of lines 7, 8, and 9 A comparison of the two photographs gives a rough idea of the accelerating action of nasal secretion on the growth of the meningococcus

It was immaterial whether in this experiment, Ringer's solution was substituted for distilled water in the control dilutions to obviate all possible harmful action of the distilled water, the result was the same There is possibly a slight increase in the growth obtained in the control, due to the use of Ringer's solution but this increase was not sufficient to alter the main result of the experiment There was always a preponderating growth with nasal secretion extract

Experiment II (Figs 3 and 4) —In this experiment, *instead of an old laboratory culture being used as in Experiment I, a freshly isolated strain of the meningococcus (Walters) was taken* This had been obtained from the spinal canal of a cerebro spinal fever patient about a week previous In this instance the dilutions of a "standard" emulsion were made as before in distilled water and nasal secretion (aqueous extract) but instead of a small quantity of each dilution being transferred to the plates by means of a brush each dilution containing 30 c mm of fluid was transferred by means of a fine capillary pipette to the surface of the culture medium Thus instead of a series of lines a series of drops or blebs were obtained representing 11 consecutive dilutions of the germ in distilled water and nasal extract respectively

A comparison of Figs 3 and 4 shows the accelerating action of the nasal secretion extract over that of the distilled water one The figures, however, hardly bring out the proper difference between them as the spreading of the drops on the surface of the medium has been irregular Actual inspection of the plate Fig 4 shows for instance that dilution No 11, which contains the fewest number of organisms, is very thin and spread out, while No 1, which contains the largest number of germs, is very heaped up and thick a condition which is not very obvious from the photograph

The comparison of dilutions 7-11 of Fig 4 with the same dilutions in Fig 3 dispels any doubts as to the accelerating action again of nasal secretion in this experiment

Experiment III —In this experiment *it was sought to find out the amount of accelerating action nasal secretion extract brought about on the growth of the meningococcus when growing in a fluid broth medium and not a solid medium as in the former experiments* To two small vaccine tubes containing each 2 c c of sterile glucose litmus broth 5 c cm of "standard" emulsion of meningococci (Walters) was added To one of the tubes in addition 5 c cm of an aqueous extract of dilute nasal secretion was added The tubes were then incubated for 48 hours at 37° C At the end of this time the tube that had received the nasal secretion in addition to the meningococci had entirely lost all trace of pigment, while that which was without the extract still retained a certain amount of reddened litmus pigment The tubes were then carefully shaken up to ensure an even distribution of the cocci, and counts were made of a certain volume of fluid from each tube This showed that there was roughly eight times the number of cocci per c mm in the tube with the nasal extract as compared with that without it

Experiment IV —In this experiment an attempt was made *to see if prolonged boiling of aqueous extract of dilute nasal secretion had any action in destroying its power to stimulate the growth of the meningococcus* 4 c c of an aqueous extract of dilute nasal secretion was boiled continuously for five hours distilled water being added from time to time to keep it at the same volume (See Sec 3 *b*) It was then tried out as before against some of the same aqueous extract unboiled, with a "standard" emulsion of meningococcus (Littledale) It was found that the boiling had had but little or no effect in weakening the action of the nasal secretion

Experiment V (Figs 5 6, and 7)—In this experiment *hydrolysed nasal secretion prepared by boiling undilute nasal slime with strong hydrochloric acid for 12 hours (as described in Sec 3 (b)) was tested against the action of the same nasal secretion untreated with HCl* Dilutions of a "standard" emulsion of a freshly isolated culture of meningococcus (Lake) were made in distilled water (control), nasal slime and nasal slime hydrolysed, respectively These were planted out on a plate by means of a brush in the usual way

Photographs 5-7 show the result of this experiment It will be seen that the hydrolysed nasal secretion is as active in accelerating the growth of the meningococcus as the same secretion untreated (Figs 6 and 7) The action of both hydrolysed and the non hydrolysed secretion in accelerating growth is well shown by comparison of these plates with that planted out with the control dilutions in distilled water This experiment has been repeated a number of times with different strains of meningococci and always gave the same result

Experiment VI (Figs 8-11) —*To determine the relative power of a plain alcoholic extract of dilute nasal secretion as compared with a plain aqueous extract and an ether extract of the same in stimulating the growth of the meningococcus* Dilutions of a standard emulsion of meningococcus (Lake) were made as before The diluents were distilled water (control) aqueous extract of dilute nasal secretion plain alcoholic extract of dilute nasal secretion and ether extract of the same Figs 8 11 show the resulting growth obtained after 24 hours incubation at 37° C Comparison of Fig 10 with Fig 9 shows the action of a plain alcoholic extract of dilute nasal secretion to be almost as active as that of an aqueous one while comparison of both these figures with the control in distilled water (Fig 8) shows the amount of acceleration in growth produced

The conclusion drawn from this experiment was that the active principle in nasal secretion which [illegible]

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[*] If we commence with an emulsion of 5000 million meningococci to a cubic centimetre and make nine consecutive dilutions of 5 parts in 30 in each dilution then theoretically we should expect to find in each of the nine dilutions the number of cocci per cubic centimetre as follows —

Dilution	Cocci	Dilution	Cocci
1	833 000 000	6	107 000
2	139 000 000	7	18 000
3	23 000 000	8	3 000
4	4 000 000	9	500
5	640 000		

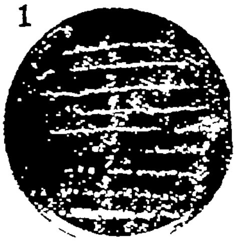
These numbers were never actually approached in the following experiment as the pipettes and brushes were not sterilised in passing from one dilution to another

[†] The numbering of the experiments is only for the convenience of the present paper many of the experiments described have been repeated a great many times

[‡] All the experiments described in this paper refer to implantations on Crowe's alkaline medium

EXPERIMENT I —*Meningococcus "Littledale"*

1



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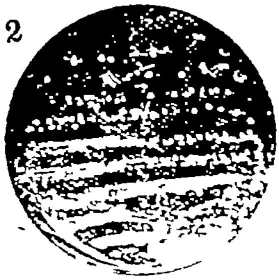

FIG 1 —Dilutions in distilled water (Control)
FIG 2.—Dilutions in aqueous extract of sterile dilute nasal secretion

EXPERIMENT II.—*Meningococcus "Walters"*

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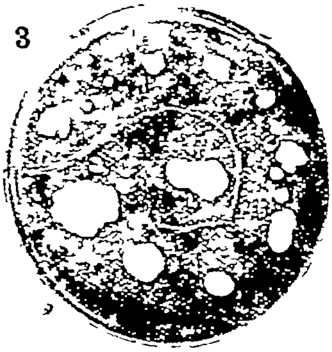

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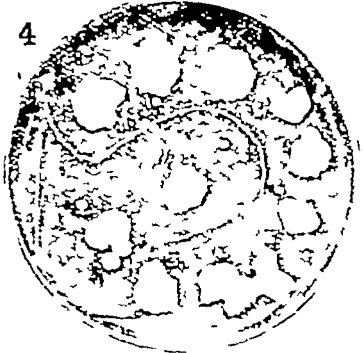

FIG 3 —Dilutions in Ringer's solution
FIG 4 —Dilutions in dilute aqueous extract of nasal secretion

EXPERIMENT VI —*Meningococcus "Paul*

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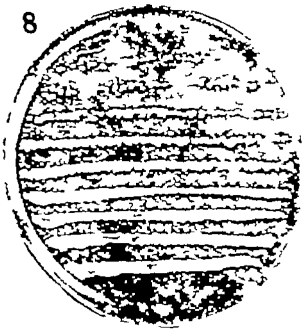

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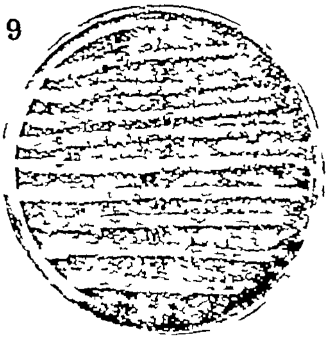

FIG 8 —Dilutions in distilled water
FIG 9 —Dilutions in aqueous extract of nasal secretion

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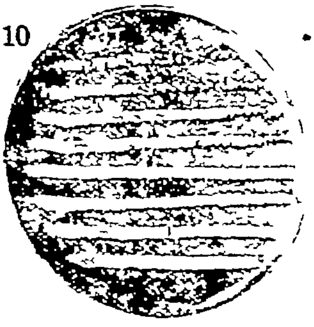

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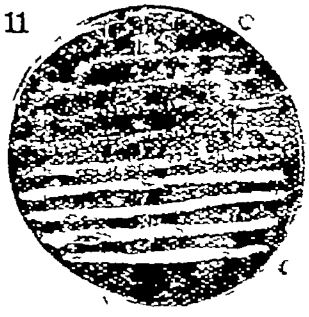

FIG 10 —Dilutions in alcoholic extract of nasal secretion.
FIG 11 —Dilutions in ether extract of nasal secretion

EXPERIMENT V —*Meningococcus "Yale"*

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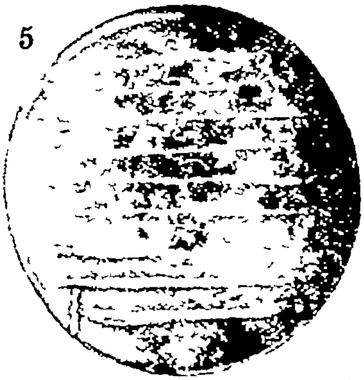

FIG 5 —Dilution in distilled water (Control)

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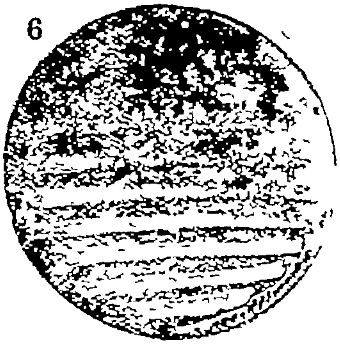

FIG 6 —Dilution in aqueous extract of dilute nasal secretion

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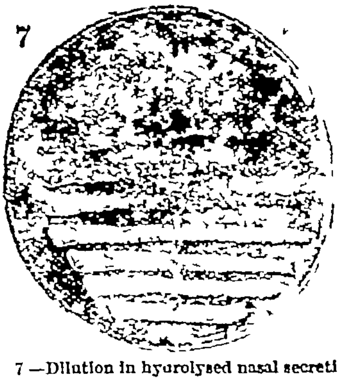

FIG 7 —Dilution in hydrolysed nasal secretion

EXPERIMENT VII —*B typhosus*

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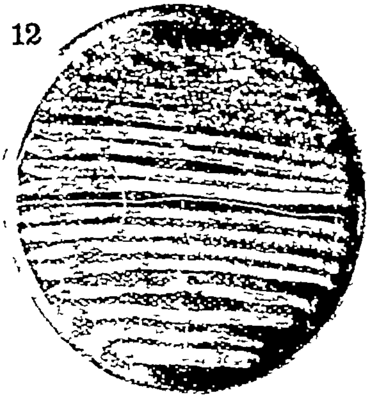

FIG 12.—Showing the action of dilute nasal secretion in stimulating the growth of *B typhosus* The upper half of the plate shows the dilutions of the germ in Ringer's solution while the lower half shows the dilutions in dilute aqueous extract of nasal secretion

Cultures (one third natural size) photographed after 24 hours' growth The streaks are to be read from above downwards growth of the meningococcus is soluble in distilled water, less so in alcohol and almost insoluble in ether

Experiment VII (Fig 12) —*To determine the action of nasal secretion extract on the growth of B typhosus* In Fig 12 the upper half of the plate has been planted out in the usual way with dilutions of an emulsion of *B typhosus* in Ringer s solution, in the lower half, with dilutions of the same emulsion in aqueous extract of dilute nasal secretion Fig 12 shows that a much more abundant growth took place on that half of the plate which received the nasal secretion

The conclusion drawn from this experiment was that the growth of *B typhosus* is accelerated in a similar manner to that of the meningococcus by an aqueous extract of dilute nasal secretion

Similar results were obtained in experiments with the following germs —*Streptococcus zymogenes*, *Micrococcus pharyngeus flavus*, pneumococcus and *B coli communis*

Conclusion

The outstanding results of the foregoing experiments show that in nasal secretion there is present some body which greatly accelerates the growth of the meningococcus on an artificial culture medium Alone it is incapable of acting as a food or stimulant to the growth of this germ It is soluble in water less so in alcohol, and very insoluble in ether It has great heat-resisting power, being able to resist prolonged boiling for many hours It is not destroyed by boiling in the presence of strong hydrochloric acid for twelve hours In addition to the meningococcus it also stimulates the growth of many other pathogenic germs

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A NOTE ON THE CAUSE AND PREVENTION OF TRENCH FOOT

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No one who has had an opportunity of observing many cases of trench foot particularly in the later stages of the disease can have failed to be struck with certain characteristics presented by it The lesions are indolent slow to heal and prone to break down again on the slightest provocation The scar tissue formed is weak and ulcerates easily Indeed, the whole picture of the disease reminds one irresistibly of the trophic sores appertaining to diseases of the central nervous system I wish to set forth in this paper my reasons for thinking that trench foot is an affection of a trophic nature

Some three years ago a book on electro pathology was published by Mr A E Baines a distinguished electrical engineer Space does not permit me to give an account of the far reaching vista of promise which this little known work has opened up to medicine An abler pen than mine has recently put the whole matter before the profession Let it suffice to say that Mr Baines believes that the brain and possibly the cord, is the seat of electrical generation, and that the current so generated is carried to the tissues by means of the nerves, which to the electrician s view are nothing but insulated cables Here we have the trophic influence of physiology and medicine that vague generalisation which from our student days we have been content to accept without questioning Mr Baines has shown us how to measure and modify this trophic influence, and I venture to predict that in the future his name and fame will equal that of those illustrious ones Simpson, Lister and Koch as benefactors of the human race This is no mere discovery of an isolated fact in medicine Many a patient worker has given his brick, his hard wrought stone of research to the building of the sacred fane of Æsculapius As is perhaps fitting and proper for an engineer Mr Baines has come and shed a flood of light in our temple For he has given us a fundamental principle

The dominating factor in the conditions under which trench foot occurs is wet When a man is standing for days on end in water and liquid mud his boots socks and the skin of his feet and legs become soaked As is well known the electrical resistance of the skin is enormously diminished when the skin is wet Under these conditions a gradual leakage of electricity to earth takes place from the feet Other things being equal electricity will always leak from a point in preference to a plane surface which accounts for the fact that the toes are most affected This leakage deprives the cells of the foot tissues of their trophic influence and they die Hence the lesions of trench foot

Local leaks of electricity may be detected by a suitable galvanometer One pole of the galvanometer should be connected to a silver plate about the size of a florin which is fixed in the centre of the patient s forehead, there is no special reason for fixing it on the forehead except that it is the most convenient spot in the middle line of the body The other pole is connected to a contact plate mounted in an insulated handle so that the contact or electrode can be placed on any portion of the body it is desired to test Before testing it is necessary to "earth" the patient in order to dissipate any induced charge of electricity of which he may be the host If this is not done the patient s own intrinsic current may be swamped by charges he has picked up from trams, electric trains or other sources With both poles in contact with the body the galvanometer will give a deflection When leakage is taking place from any particular area a high and rapid deflection is noted I have been examining and treating various cases on Baines s principles for a matter of about two years and have found such a leakage taking place from the feet and legs of soldiers suffering from trench foot whom I had under my care last spring Moreover the results I obtained by treating these cases by dielectric oil were better than the results obtained by any other method I tried I also made a few experiments bearing on this subject

Experiment 1 —With the aid of Miss Flecker, at the Ladies' College Physical Laboratory, Cheltenham, I estimated the electrical resistance of a piece of oak tanned sole leather 3 inches long by 1 inch wide We found that when dry the resistance was practically infinity When wet the resistance is that of the fluid the leather has soaked in

Experiment 2 —One pole of the galvanometer was connected to an electrode which could be held in the hand The other pole was connected by an insulated cable to a copper plate imbedded in the earth Another insulated cable was connected at one end to the metal pipe supplying water to the house, and at the other end to a brass rod of 1 inch section After earthing myself I held the brass rod in one hand and the electrode in the other, and obtained a rapid off scale deflection, showing firstly, that an electric current was coming from my body, and secondly, that the earth connexions were working properly, for the current passed out by one hand through the brass tube to the water pipe thence about 20 feet through the earth to the copper plate and through the galvanometer to the other hand, so completing the circuit

Experiment 3 —The brass tube was then laid on the floor which was covered by a thick carpet I held the electrode by one hand and put both feet on the brass tube I wore ordinary boots which were dry No deflection was obtained because the dry leather soles of my boots insulated me from the earth I then took my boots off and put my bare feet on the tube and obtained an off scale deflection

Experiment 4 —Next day was wet and I walked about half a mile so that the soles of my boots which were free from holes and metal nails became wet On holding the electrode in one hand and placing my feet on the brass tube, a rapid off scale deflection occurred showing that current was passing through my boots to earth

Experiment 5 —The pole of the galvanometer connected to earth by the copper plate was disconnected It was reconnected to a hand electrode exactly like the one previously used so that the galvanometer was now connected to the hand electrodes only After the necessary earthing process, I held the electrodes in the hands and obtained a deflection which remained steady at 170 mm I then placed my feet still in wet boots on the brass tube and awaited results The light on the scale very slowly began to recede towards zero I repeated this experiment several times The light never remained at zero but if it got as far went over to the other side of the scale, and generally registered 40 to 60 mm I take this as evidence that electricity was gradually leaking out of my body to earth, through my wet feet One would not expect the light to register zero as there is continuous generation of electricity in the body In view of these experiments, the grandmotherly advice we have so often received not to stand about in wet boots takes on a new and important significance which ought to claim our belated respect They also to my mind afford evidence that trench foot is probably caused by long-continued leakage of electricity from the feet

I noted that Dr Leonard Hill had advocated rubber boots and greasing of the feet for the prevention of the disorder recommendations with which I cordially agree I sent to him in the spring a note about my own experiments and received from him a courteous letter thanking me for my "ingenious speculations," but countering me with the query "What about fishes, fishermen, and Channel swimmers?' When truth is really truth the most knock out objections often end in being pillars in its support Just as the vagaries of radium appeared to undermine the whole structure of physical science, and now form an additional proof that the foundations of that science have been well and truly laid, so Dr Hill's objections assist my argument. For fishes are provided with a dielectric coat of mucous, I never heard of fishermen who had wet feet as long as the men in the trenches and Channel swimmers always try to emulate the fish by rubbing themselves with a dielec ric coat of oil Their idea is to keep out the cold—it is really to keep in the electricity of their bodies, improved methods of accomplishing this result will at once suggest themselves to anyone acquainted with Baines's work.

The experience of officers at the front is that trench foot can be prevented. I am certain it can, but it can only be done, firstly, by keeping out the wet, and, secondly, by keeping up the electrical resistance of the skin of the feet The feet should be thoroughly greased, and by far the best grease to use is the dielectric ointment which is now an article of commerce It is interesting to note that our French colleagues are suggesting the use of ambrine for trench feet, they have had very good results with it in burns, but it is used empirically without appreciation of its dielectric action I doubt if anything could improve on the results obtained by dielectric oil in cases of burns

Rubber boots if worn for any length of time cause the feet to perspire too freely White Robertson in the paper referred to above has shown that the soles of the feet and palms of the hands are parts which are designed to sweat freely and through which the normal escape of electricity to earth mostly takes place The disadvantage of rubber boots is that owing to the excessive perspiration they cause the skin of the feet is liable to become sodden and so lose its electrical resistance. Soaking the boots, socks and puttees in oil is the alternative I suggest for rubber boots Any thick oil would do as a preventive, kitchen fat rendered with olive oil or cotton seed oil might be tried, but I think that the skin of the feet should be rubbed with a dielectric grease. If signs of trench foot should develop in cases where these precautions have not been efficiently carried out the best treatment is to wrap the foot and the whole of the lower part of the limb as far as the knee joint in gamgee tissue soaked in dielectric oil I have seen enough of this treatment to justify the assertion that no serious case of trench foot necessitating amputation need take place

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

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A CASE OF SARCOMA OF THE MEDIASTINUM INVADING THE LUNG

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GRANGE-OVER-SANDS

THE following case illustrates the points of resemblance between phthisis and malignant disease of the lung On the admission of the patient to the sanatorium seven weeks before his death the clinical picture was in the main one of phthisis but in the later stages the distinguishing features of thoracic tumour manifested themselves and suggested malignancy

A man aged 55 years was admitted to the Westmorland Sanatorium on Sept 13th 1916 with a history of good health until the previous April when he first complained of radiating pain in the front of his chest followed shortly afterwards by cough and expectoration which compelled him to give up work in July His sputum was copious and mucopurulent, of a yellowish brown colour, and well intermingled with blood No T B were found Examination showed deficient expansion, dullness high pitched breath sounds almost tubular in character, and increased vocal resonance over the upper lobe of the right lung Over the apex of the right lower lobe the signs were somewhat similar but less pronounced The left lung seemed healthy There were no cardiac murmurs and the urine was normal His chief complaint was of the flitting pains across his chest, which were generally most severe at night Cyanosis, first noticed in the lobules of his ears early in October, gradually spread to the face, while there was none of the extremities With the deepening of the lividity there developed œdema His lower eyelids became heavy with watery bullæ and his neck swollen, measuring on the day of his death 17 inches at the level of the thyroid cartilage, while in health he wore a collar of 15¼ inches The external jugular veins stood out prominently The superficial veins of the chest became distended, more markedly on the left side, and running along the left costal margin corresponding to the attachment of the diaphragm was a network of dilated venules The superficial abdominal veins were not distended There was no swelling of the arms or legs The glands at the root of the neck and in the axillæ were enlarged The pupils were equal and so were the radial pulses Towards the end he became very drowsy, even falling asleep during conversation His breathing became stertorous and he died on Nov 1st A differential blood count made after the cyanosis became evident showed polynuclears 92 per cent lymphocytes 3 per cent, and mononuclears (large) 5 per cent The Arneth count gave a ratio of 46 to 54 The temperature was normal until the last few weeks, when there was a slight rise, but not beyond 99·4° F, with a small daily variation At the post-mortem examination it was found that a large solid mass filled the superior and the posterior mediastinum The pleura covering the right lung was firmly adherent The upper lobe of the right lung was almost entirely invaded by tumour, and there was involvement of the upper portion of the lower lobe The left lung and its pleura were healthy Microscopically the tumour was seen to be a lympho-sarcoma A section showed the growth destroying the wall of the superior vena cava and projecting into its lumen

The case is of interest in showing the difficulties attendant on the making of a diagnosis of phthisis in the absence of tubercle bacilli from the sputum The blood examination was helpful, although unfortunately, a count was not made until the later stages of the illness The high polynuclear count suggested an acute mixed infection if the case were really tuberculous, but the nearly normal temperature negatived such an infection The Arneth count was practically normal, while according to the findings of different observers an active tuberculosis causes a definite deviation to the left

For permission to publish this case I am indebted to Dr C F Walker, medical superintendent of the Westmorland Sanatorium

Grange-over-Sands

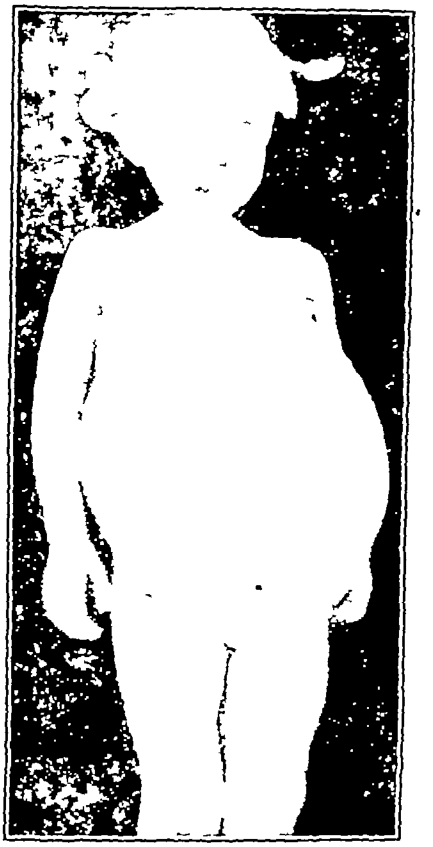
A CASE OF LARGE OMENTAL CYST IN A CHILD

By FREDERICK C PYBUS, M S DURH, F.R C S ENG.,
SURGEON TO THE HOSPITAL FOR SICK CHILDREN ASSISTANT
SURGEON TO THE ROYAL VICTORIA INFIRMARY
NEWCASTLE-ON TYNE.

OMENTAL cysts are sufficient rarities to warrant the publication of individual examples The following notes are those of a patient in the Hospital for Sick Children, Newcastle-on-Tyne

The patient, a girl, aged 4 years, was admitted to hospital in June, 1915 supposed to be suffering from tuberculous peritonitis She was the only living child of a family of three, the mother having died of phthisis It was noted that the child's abdomen had been swollen since she was 9 months old She had been tapped on two occasions at the ages of 18 months and 2 years, but on each occasion the fluid gradually returned After admission she was again tapped six pints of fluid being removed A few weeks later she developed scarlet fever and was transferred to the fever hospital The photograph shows the condition of the abdomen at this period

She was readmitted to the hospital in May, 1916 The circumference of the abdomen was 29¼ inches She was tapped twice shortly after admission, two pints being removed on each occasion The fluid was of a slightly reddish colour and contained cholesterin crystals I was then asked to see her by Dr J E Dainty, who suggested that the condition might be a cyst and that abdominal exploration would be advisable She was transferred to my ward and an operation was carried out in June, 1916 The abdomen was opened above the umbilicus A thin walled cyst was found occupying the larger part of the abdomen Three fine strands passed from the cyst to the abdominal wall, which I regarded as due to the previous aspirations The cyst was tapped and drawn outside the abdomen It was thin walled, partially loculated, and situated in the great omentum It was readily stripped from the omentum except at one part where the omentum was torn, and its upper part had to be peeled from the greater curvature of the stomach The omentum was repaired, completing the anterior wall of the lesser sac The abdomen was then closed The child made a perfect recovery and was discharged a fortnight later The cyst was of the size of a large football The exact quantity of fluid was not measured, but half filled an ordinary pail The cyst was occupied by a thin brownish fluid containing cholesterin crystals and was partially divided into several loculi Portions of the great omentum were removed with the cyst and remain adherent to its wall Microscopic examination of its wall revealed no epithelial layer, so that it is difficult to account for its origin



Omental cyst in a girl of 4 years Circumference of abdomen 29½ inches

Newcastle on Tyne

DONATIONS AND BEQUESTS —The Chelsea Hospital for Women has received from the trustees of the Zunz Bequest £5000 being the balance of the £10 000 generously promised by the trustees towards the rebuilding of the hospital —The trustees of the late Miss Marjory Shanks Schaw of Glasgow have given £60 000 to the Western Infirmary £40 000 to the Victoria Infirmary Glasgow and £10 000 each to the Royal Samaritan Hospital for Women the Royal Hospital for Sick Children the Royal Maternity and Women s Hospital, and the Association for the Relief of Incurables all Glasgow institutions —The late Mr John Sloughgrove of Lurleigh has bequeathed £150 to the Essex County Hospital £200 each to the Royal London Ophthalmic Hospital and the Reedham Asylum for Fatherless Children, £300 to Dr Barnardo s Homes and £250 each to the London Hospital and the Eastern Counties Asylum for Idiots —The late Miss Isabella Mary Peploe Smith of Onslow square S W , bequeathed £500 each to the Cancer Hospital Brompton the Consumption Hospital Brompton and the Society for the Prevention of Cruelty to Animals

Medical Societies.

ROYAL SOCIETY OF MEDICINE

SECTION OF HISTORY OF MEDICINE

Casanova's Memoires

A MEETING of this section was held on Dec 20th, 1916 Dr NORMAN MOORE, ex President being in the chair

Dr J D ROLLESTON read a paper on the Medical Interest of Casanova's Mémoires He said that as a child Casanova appeared to have suffered from adenoids and small pox His sanguine temperament predisposed him to epistaxis to which he was subject from childhood and to piles which he first developed during one of his imprisonments From early adult life onwards he had attacks of fever possibly malarial in origin, and at the age of 45 he had a severe attack of lobar pneumonia He had numerous attacks of venereal disease—gonorrhœa and soft chancre and possibly syphilis, as might have been expected from his own account of his life He apparently sought medical advice on each occasion, and no sequelæ resulted In old age he suffered from gout and his death was probably due to septic absorption, secondary to enlargement of the prostate Originally intended for the medical profession, Casanova retained throughout his life his interest in medicine as is shown by his descriptions of disease his criticism of doctors his dogmatic opinions on medical subjects his successful simulation of various maladies and his incursions into the field of therapeutics

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Reviews and Notices of Books.

Diseases of the Umbilicus

By THOMAS S CULLEN, M B , Associate Professor of Gynæcology, Johns Hopkins University With 269 illustrations London and Philadelphia W B Saunders Company 1916 Pp 665 Price 35s net

THIS volume contains a complete account of the various diseases affecting the umbilicus and the urachus Not only has Dr Cullen collected all that is known about these conditions but he has also carefully recorded the more important cases, so that his work will be invaluable for reference to any future workers and serve as a foundation on which they may build

It would seem hardly possible that so many pages could be needed to describe the diseases of so small an area of the body as the umbilicus This book however deals not only very fully with all the known diseases of the navel but also with such other matters as the omphalomesenteric duct and vessels Meckel s diverticulum and the urachus The importance of the embryology of the umbilicus is very considerable because so many of the lesions are due to a partial or complete lack of closure of the omphalomesenteric duct or of the urachus The section devoted to this subject is extremely clear and is illustrated by a very fine series of drawings by Max Brödel The many interesting and instructive points which a detailed study of the anatomy reveals are well set out in Chapter II and the four plates showing the different forms of the umbilicus will be a revelation to those who have never studied this region particularly Umbilical infections and hæmorrhage in the new born child happily have lost the importance they once had but an account of many of the old epidemics is given by the author and their relation to infections of the umbilical stump clearly shown A large number of cases of the curious tumours formed by remnants of the omphalomesenteric duct the so-called umbilical polyp are collected and given in full while the chapters dealing with a patent omphalomesenteric duct and prolapse of the bowel through such a duct are most interesting As the author rightly points out when a small umbilical polyp is noticed after the cord has come away the probable persistence of other portions of the omphalomesenteric duct such as a Meckel s diverticulum or a cord from the mesentery to the umbilicus may be remembered and the added possibility of intestinal obstruction developing later in life explained to the parents It is interesting to find that most of the cases of so-called dermoids of the umbilicus turn out on further investigation to be nothing more than inflammation due to the irritation of an umbilical concretion the presence of caseous material and wool from the patient's clothing having led to an erroneous diagnosis in many of the cases Records of cases of Paget's disease, diphtheria and syphilis of the umbilicus are given, and also numerous cases illustrative of the escape of intra and extra abdominal fluid mostly pus, through the umbilicus as well as cases of umbilical fistulæ

Among the most curious of all the conditions described is the series collected by Dr Cullen of umbilical tumours containing uterine mucosa or remnants of Müller's ducts, in reality adenomyomata of the umbilicus It was a case of carcinoma of the umbilicus which first led the author to a study of the whole subject, and the chapter on that condition contains the records of many cases of both primary and secondary carcinoma of this region These clinical histories show that the development of a small, hard umbilical nodule in a patient at or beyond middle age should at once raise suspicion as to the presence of some intra abdominal malignant growth, and if there be symptoms suggestive of carcinoma of the stomach or gall bladder the probability will become almost a certainty Urachal anomalies, such as cysts, large and small simple and infected, patency of the urachus and urinary fistulæ may give rise to a great deal of inconvenience and present clinical features often difficult of diagnosis. They are all, however, very fully described by the author, and a reference to this work should assist in clearing up many diagnostic puzzles of this nature.

The whole is a monument of industry and skill, and will form the most complete and important work on this subject for many years to come

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Tratado de Pediatria

Por el Dr MARTINEZ VARGAS Tomo I, Fundamentos de la Pediatria With 12 figures and 27 plates Barcelona J Vives Pp xiv -959

Dr Martinez Vargas, who is professor of pædiatry in the University of Barcelona, founder and President of the Spanish Pædiatric Society and member of many learned societies both Spanish and foreign is to be warmly congratulated on this first volume of what, if the standard here set is maintained in the two further volumes promised will be a really monumental contribution to the study of his subject, using the word in its widest and most comprehensive sense Dr Vargas connotes by pædiatry not merely the study of the diseases of children from the standpoints of pathology diagnosis and therapeutics but also a fairly detailed consideration of the anatomy physiology hygiene and vital statistics of infancy and childhood, he pays some attention to the history of pædiatry, its literature and its development in civilised countries throughout the world

In the first chapter, headed "General Considerations" (*Generalidades*) Dr Vargas defines pædiatry as that department of medicine which takes for its subjects of study infancy and childhood in such of their aspects and relations as are of special interest to the physician. He goes on to discuss the limits of the subject and some of the special characteristics of infancy and childhood their vulnerability to morbific influences on the one hand, their quick reaction and recovery on the other, the readiness with which anæmia comes on in any complaint tending to chronicity, the rapidity with which, in serious illnesses exhaustion both supervenes and is recovered from, the influence of growth and the preponderance of the lymphatic system. Next he deals with the anatomy of infancy and childhood when the thymus gland its anatomy and special *functions* are discussed fully Then, after describing the special physiology of the new born infant he passes to a detailed consideration of the subject of infant feeding This section is of especial value and is abreast of our present knowledge of the subject Sections on dentition and growth complete the consideration of the special physiology of children and the remainder of this section is devoted to digestion respiration and other functions common to the child and the adult For the rest the book deals systematically with the hygiene, pathology and therapeutics of childhood

The author's treatment of his subject is thorough and is characterised by a lucidity and sureness of touch which are the obvious fruit of wide knowledge and practical experience. The publisher is to be congratulated on the excellence of the plates and figures illustrating the work.

LIBRARY TABLE

Infection and Immunity A Text book of Immunology and Serology for Students and Practitioners By CHARLES E SIMON, B A, M D, Professor of Clinical Pathology at the College of Physicians and Surgeons, &c, Baltimore. Third edition, revised and enlarged Illustrated London Baillière, Tindall, and Cox. 1916 Pp 352 Price 14s net — Dr Simon's practical and clearly written book has been brought up to date and some new matter introduced Abderhalden's protective ferments receive sufficient notice and recent work on the Wassermann reaction has necessitated the re writing of this section Allusion is briefly made to more speculative work, such as the avoidance of anaphylactic shock by the production of anti anaphylaxis, and the recognition of protection against diphtheria toxin by an allergic reaction The treatment of the whole subject gains greatly in interest in this way Dr Simon primarily conceived his book for the enlightenment of the general practitioner In its present form he believes that it may serve as a basis for a course of systematic instruction, and in this we agree with him

The Charaka Club Vol IV New York William Wood and Co 1916 —The fourth volume of the proceedings of the Charaka Club has much the same character as that of its predecessors, to which we have already made reference in these columns The members of the club number some of the most prominent medical men who are practising or who have practised their profession in the United States, its object is to read papers and to promote discussion upon medico historical subjects There is no doubt that the interest of medical men in literary and artistic matters bearing on medicine has steadily increased of late, and to this agreeable fact it is quite likely that the publications of the Charaka Club have contributed, for the first two volumes are now out of print and their messages must have been widely disseminated though the membership of the club is small The most important article in the present volume is a learned and fully illustrated dissertation upon Saint Cosmo and Saint Damien, the patron saints of surgeons apothecaries, and barbers, whose presentations confront us so frequently in the picture galleries of Venice and Florence Other interesting papers are one by Dr Collins on the literary leanings of the physicians of the eighteenth century and one entitled "The Development of Anatomical Illustrations of the Nervous System," by Dr C L Dana Vesalius stands out among all the early illustrators of neurology for his knowledge and accuracy but the diagrams made practically at the same time—i e 1545—by Charles Estienne (Stephanus) are wonderfully good judging by the examples furnished by Dr Dana. A sad history attaches to a sketch of the history of the University of Alexandria as the author Dr J G Mumford died just before its publication A biographical note on Antonio Scarpa is supplied by Dr A G Gerster Dr Pearce Bailey sends a short story of some medico psychological interest and the Bacon and Shakespeare controversy is reviewed from the botanical aspect by Dr G L Walton

The Care of the School Child Edited by JAMES KERR M A. M D Cantab London The National League for Physical Education and Improvement *1916 Pp 230* Price 2s 6d —Bishop Boyd Carpenter introduces the reader to an admirable series of popular monographs, each by an expert, reprinted from lectures delivered under the auspices of the National League for Physical Education and Improvement during the summer months of 1916 The lectures are popular in the best sense, they may readily be understood by anyone who cares to read them with attention but they contain the most recent knowledge on the subject in hand and the proper deductions *from* this knowledge The chapters on malnutrition and the cripple child seem to us specially helpful. The book will be read with advantage by parents teachers nurses, health visitors, medical students, and even practitioners

Human Temperaments By CHARLES MERCIER, M D Lond, F R C P Lond *London* The Scientific Press, Limited Pp 91 Price 1s net —Dr Mercier in this small book sets out the description of ten well known types of character drawn from his personal study of men and women He begins by amusing and adroit chapters defining temperament generally cleverness and capability, and proceeds to describe the artistic religious, envious, jealous, and *suspicious* temperaments the man of action the practical man, the man of fads, the man of business, and the philosopher The essays are written in Dr Mercier's well known style—they are witty, pithy, and dogmatic, and display a wide range of observation and learning Thinking people must endorse a great many of Dr Mercier's generalisations—a statement which is likely to tempt Dr Mercier to modify them, but no one who presumes to have opinions of his own, and who possesses any experience with which to back them, is likely to agree completely with him, so that opportunities for battle are provided We recommend the brochure cordially to our readers It is always extremely readable and often very wise

Wheels An Anthology of Verse Oxford B H Blackwell Pp 84 Price 2*s* 6*d* net —We are not often asked to express an opinion upon verse and, when we are, the object of the writer has generally been the illustration by social incidents or pathological phenomena of some medical doctrine or moral Such volumes are almost invariably failures, dull when they are serious and unspeakably so when they are in jocose vein "Wheels" has no medical aspects whatever, save the unconscious revelation by the authors that the psychology of the cultivated youth of to day finds ready and graceful expression in verse—where their fathers wrote short stories and their grandfathers long essays, they sing The camps and the trenches during the past two years have produced many copies of verses having claim to notice as beautiful poetry, and "Wheels," though little of its contents may have been written in the circumstances of war, has an origin similar to that of the rapidly increasing war anthology It is composed, speaking for its common and essential quality, of impressions suddenly seized and handed on by writers who are conscious of what has been suggested to themselves and who are determined to share the suggestion with others The idea of these young poets is that the rôle of poetry is rather to crystallise fleeting views and aspects, to catch and fix vague and half formed ideas, than to do any of the brave things associated in popular literature with the title of poet—to lead to uplift, to amaze The inspiration of these nine different writers—different in style, technique, and standard of accomplishment—has been a common one They strive to show that any impression received by one person should be communicable to others by the medium of symbolic word pictures, and says the preface,

> Our words are turned to spokes that thoughts may roll
> And form a jingling chain around the world
> (Itself a fabulous wheel controlled by Time
> Over the slow incline of centuries)

We recommend the book to lovers of verse, leaving them to decide which spoke of the wheel they prefer, and to guess which individual singer is most likely in the future to gain a large audience or make a stronger individual effort. The contributors are Edith, Osbert and Sacheverell Sitwell, E Wyndham Tennant, Arnold James, Victor Perowne Nancy Cunard, Helen Rootham and Iris Tree

Poland's Case for Independence A Series of Essays illustrating the Continuance of Her National Life London George Allen and Unwin, Limited Pp 352 Price 7*s* 6*d* net —The essays which make up this book have been supplied by the Polish National Committee and have been written to prove that the national life of Poland has never ceased to exist despite the brutal fate which has been meted out to the country by the militarism of more powerful States The book interprets the manifestation of that life to foreigners and especially to the people of Great Britain, who have been persistently friendly to the Poles and in our opinion the claim of the writers is made entirely good that a country which has manifested such indestructible vitality has a right to the independence she claims The essays comprise one by Dr R W Seaton Watson on the landmarks of Polish history and another by Mr Rajmund Kucharski describing the persistent struggle for independence Mr Arthur F Gurney contributes usefully on the population question showing what were the extensive territories which up to 1772 constituted the Commonwealth of Poland and what were the nationalities of the various inhabitants This chapter appropriately precedes an essay by Mr Stanislaw Posner upon Poland as an independent economic unit and the book closes with sketches of the history of intellectual Poland its literature art and music. From the outset of the war it has been felt that the settlement of Poland will form a question of the utmost importance and one whose adjustment requires a sympathetic knowledge of Polish affairs such as is here shown

JOURNALS

Annals of Tropical Medicine and Parasitology, Vol. X, No 1.—This number of the annals contains four articles three of which are contributed by Dr J W Scott Macfie, of the West African Medical Staff and pathologist to the colony of the Gold Coast, the fourth being furnished by Professor J W W Stephens, of the University of Liverpool Dr Scott Macfie's first paper describes a fourth variety of trichonocardiasis affecting the shafts of the hairs in the axilla and groin, and caused by *Nocardia tenuis*, either alone or associated with a chromogenic organism His second contribution is entitled "Observations on Urinary Amœbiasis," and in this he makes reference to three cases which were recently investigated in the Gold Coast the infection in these instances, as well as in the few others already reported by previous observers being due to *Entamœba histolytica* Urinary amœbiasis, it appears, may be due to a primary infection, or it may be secondary to amœbic dysentery Cystitis, tumour of the bladder and gonorrhœa are said to be predisposing causes Dr Scott Macfie's third contribution deals with the morphology of certain spirochætes of man and other animals and is illustrated by a number of drawings in the text He describes a spirochæte which was found in the discharge from a mild case of vaginitis in a native woman, this organism being regarded as the causal agent of the disease Another spirochæte was discovered inhabiting the bladder of a male patient suffering from chronic cystitis, while a third variety of spirochæte was found in the throat of a native affected by pharyngitis Included in this paper are some interesting observations on the intestinal spirochætes of certain of the lower animals, including the monkey, rat sheep, cattle, goat and pig, in the fæces of which spirochætes of the *S eurygyrata* type were discovered Professor Stephens's paper is a continuation of his previous "Studies in Blackwater Fever," and in it he urges the importance of population statistics being supplied in connexion with reported cases of this disease He points out that it is high time that the disputed questions regarding this malady were settled and that systematic attempts should be made to obtain detailed information from official and other sources in localities affected by blackwater fever The incompleteness of the statements sent by some observers often rendered their contributions entirely valueless For the assistance and guidance of those who may in future compile local statistics of this disease, Professor Stephens puts forward several forms which can be filled up giving all the information that is needed

British Journal of Ophthalmology —The appearance of the first number of this journal the title page of which is the epitaph of the Royal London Ophthalmic Hospital Reports, the *Ophthalmic Review*, and the *Ophthalmoscope* marks the beginning of a new era in the literature of British ophthalmology The journal is in the enviable position of being without a rival, a position which is not free from danger Judging, however by the first number and by the imposing list of names of the editorial committee, which includes ophthalmologists of all parts of the Empire there would seem to be little fear of the journal succumbing from lack of driving power The editor Mr Sydney Stephenson, founded the *Ophthalmoscope* and by his zeal and skill made it a great success His long experience is a most valuable asset, and he is ably seconded by the assistant editor of the *Ophthalmic Review* Mr Erskine Henderson After a few remarks on the origin of the journal and the expression of a cordial welcome by American colleagues the Nestor of English ophthalmology Mr Priestley Smith leads off with a highly scientific communication on the Blood Pressure in the Eye and its Relation to the Chamber Pressure We consider it a good omen that original research is thus early and emphatically recognised and that the second place should be given to pathology in a paper on Choroidal Melanomata by Mr Foster Moore Then follow three papers on the removal of foreign bodies by the magnet the most important of which by Mr M H Whiting and Mr C Goulden, records the experiences and lessons of war work in France In the abstracts from ophthalmic literature the excellent method of collecting several papers on allied subjects for review is adopted Book notices and notes on matters of current interest conclude the number Of the 74 pages 42 are devoted to original communications The paper printing and numerous illustrations are all excellent We wish our new contemporary every success

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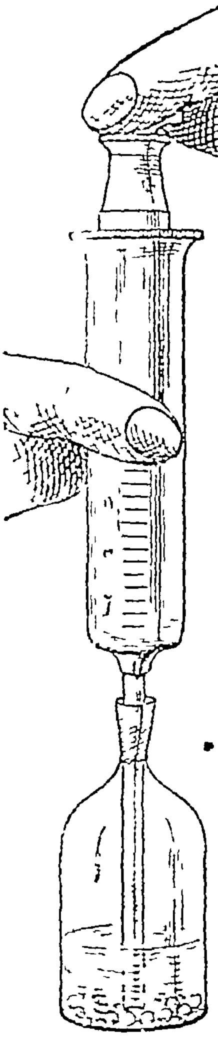

Fig 1

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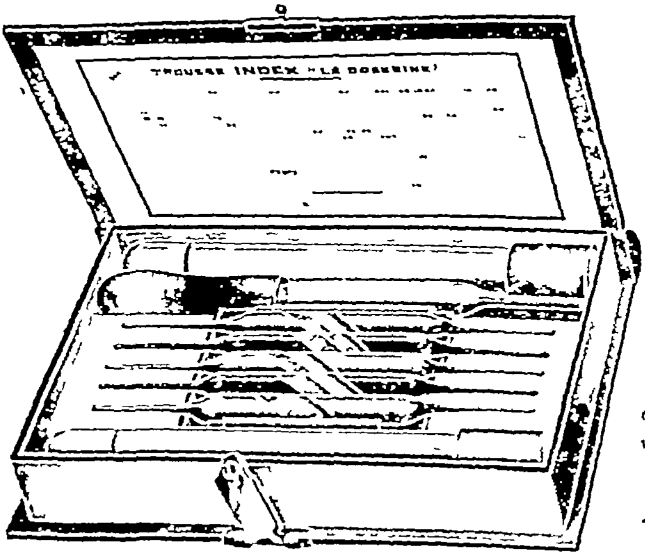

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THE LANCET.

LONDON SATURDAY, JANUARY 13 1917

Preventive Treatment in Relation to Venereal Disease

IN every infectious complaint there is a stage between infection and the appearance of evidence of disease, that symptomless incubation period which is still full of mystery in spite of our increasing knowledge of the life history of disease germs This period should logically be the most favourable time for treating disease or—if exception be taken to the word treatment in this connexion—for the *preventive treatment* of disease, reserving the word *prevention* for the avoidance of infection Regarding the incubation period, then, as an ideal time for the application of measures of preventive treatment, the field of such treatment becomes a vast one if we only are aware in every case when infection actually takes place In most instances, however, exposure to infection passes entirely unnoticed, or if noticed the chances of escape are so great, and the risk from disease itself so small, as to lead most people to neglect treatment even if available Only in the case of dangerous and awe inspiring plagues, such as small pox and tetanus, is the demand for preventive treatment on the part of those who have been exposed to infection an urgent one, and it is well known how successful is the immediate vaccination or revaccination of small pox contacts and the preventive inoculation with tetanus antitoxin of the victims of grievous wounds

There is, however, a special case for preventive treatment The possibility of infection with venereal disease must be present to the minds of all, excepting the most carelessly ignorant, of those who indulge in promiscuous sexual intercourse A definite occasion for infection has been present which cannot be overlooked, and Sir BRYAN DONKIN S letter to the *Times* last week calls attention to the fact that it would be a fresh safeguard to the community as well as to the individual to antedate the treatment for venereal disease to the period of incubation, before the symptoms have had time to appear Scientific research has, he says, shown conclusively that venereal infection can be prevented more surely than it can be cured by even the best methods of prompt treatment, and this fact was securely established by the precise experiments of the late Professor METCHNIKOFF Sir BRYAN DONKIN S allusion is to the method of inunction of a calomel ointment as soon as possible after exposure to infection, described by METCHNIKOFF in his Harben lectures delivered in London ten years ago and translated from the French in our columns at the time How far progress has been made since then is witnessed by the fact that in military administration, directed to the only organised group of society in which, before the awakening of to day, measures had been adopted to deal with venereal diseases, this inunction has already become a routine measure An Army Order issued in March of last year directed medical officers to arrange an organised system by which soldiers who had exposed themselves to the danger of venereal infection were required to attend for treatment within 24 hours of infection Men returning to barracks at any hour of the day or night were to have access to a room in the charge of an orderly who should superintend an efficient urethral irrigation with permanganate solution and an inunction into the glans penis of calomel ointment (calomel 33 parts, lanolin 100, vaseline 10) We understand that in the case of one battalion of 1700 men in which these facilities for preventive treatment were introduced the incidence of venereal disease immediately fell to less than a quarter of its previous figure

The value of early preventive treatment, then, in the case of venereal disease is as well established as it is for small pox and tetanus, and its wide application is equally indicated in the interests of individual and public health Early preventive treatment must take its natural place in any well considered scheme for control of venereal disease It may well be that provision for the use of civilians of the facilities already provided for soldiers would result in a similar limitation of disease, and thus of the necessity for prolonged treatment We are only concerned now to consider in any detail the medical aspect of the question, believing, as we do, that here as elsewhere physical and moral hygiene go hand in hand, and that it is impossible to develop one at the expense of the other It has now come to be generally accepted that the provision of early and effective treatment of the diseases acquired by promiscuous sexual intercourse is not going to increase the incidence owing to the removal of moral restraint, but the idea of a Mikado deity who must not be thwarted in his schemes for making the punishment fit the crime has died very reluctantly The same mediæval doctrine has been applied during the lifetime of most of us to the treatment of the later stages and of the sequelæ of syphilis and gonorrhœa Not only did some of our medical charities refuse, with the countenance of the regulations under which they were founded, to assist the victims of venereal disease, as far as they were able to diagnose such victims, but even the medical schemes organised by the public for mutual medical benefit—medical aid associations and sick clubs—withheld treatment from venereal sufferers We have changed all that, and to day the municipal schemes for the control of venereal diseases concern themselves keenly with the treatment of the earlier stages of those diseases The application of the same doctrine to early preventive treatment is a logical step forward, and ought to be taken at once

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Mobilisation of the Medical Profession

THE subject of the mobilisation of the medical profession came before a special meeting of the Panel Committee for the County of London on

Tuesday last, when a report submitted by the Finance and General Purposes Subcommittee was considered in detail The report recognised the urgent necessity of providing additional officers for the Royal Army Medical Corps, its authors being convinced by confidential information which had been submitted to them that a large number of additional practitioners would be required for military service

The very important resolution recently passed by the Central Medical War Committee with regard to mobilisation approved, it may be recollected, of the principle of mobilisation of the medical profession apart from any question of general mobilisation of the community For the Central Medical War Committee desire that every individual whose name is on the Medical Register shall be held bound to give such service as he is competent to give when required to do so by the State On this broad question of the mobilisation of the medical profession as an individual entity the Panel Committee for the County of London have made no pronouncement, but they consider that if such a proposal were carried into effect it is essential that the arrangements for mobilisation should be under the control of a purely professional committee They find that the Central Medical War Committee, strengthened in certain directions, would be the most suitable body to undertake the important work The recommendations of the Panel Committee provide accordingly for the addition to the Central Medical War Committee of "at least six practitioners actively engaged in panel practice, one of whom should be a woman," and they consider, further, that without serious interference with the medical needs of the civilian population much greater use could be made in the future of the part time services of civilian doctors Civilian doctors could, they hold, be advantageously employed in the treatment of sick and wounded soldiers whilst in hospitals, as well as for the discharge of other military duties at home We are certain that the members of the Panel Committee for the County of London are well aware of the difficulties attached to this proposal, but it is the expression of a very general feeling, and one which we share ourselves We believe that in this way an economy of personnel could be effected and more medical men found to meet the demands of the Director General of the Army Medical Service

We regret the recommendation of the Panel Committee that the members whom they desire to see added to the Central Medical War Committee should necessarily be engaged in panel practice The probability, of course, is that those selected for the purpose would be in active panel practice, but it is perilous to attach conditions which might become hampering The views of those in panel practice can be fairly stated by anyone really familiar with the circumstances and it is conceivable that panel practitioners might by restricting their representation to one of themselves be deprived of the offices of a particularly good nominee

Annotations.

"Ne quid nimis."

HEALTH OF THE PRISON POPULATION

FEW people regard the prison as a health resort, but the contention that such is the case in prisons in this country would be made plausible by a perusal of the report of the Commissioners of Prisons which we publish in another column The average death rate in local prisons for the last 25 years has been less than 0·5 per 1000 receptions, and although for the year under review it is nearly 50 per cent greater, the increase is entirely explainable by the altered age groups of the prison population Prisoners of military age naturally are healthier and contribute less to the prison death rate than do the older malefactors, and the actual number of prisoners of military age received in prisons has diminished to less than one third in the last three years and entirely out of proportion to the reduction in older prisoners The death rate from natural causes in convict prisons is, of course, much higher 6 per 1000 of the daily average population during the last ten years and 8 per 1000 for the year under review No emphasis can here be laid on slight fluctuations as the total convict population is so small—under 2000, in fact, at the end of the year No epidemic of infectious disease occurred during the year, and only 13 scattered cases in all, 3 each of enteric fever and erysipelas, the remainder being ordinary infectious fevers of a mild type A comparative picture of prison life under less healthy conditions may be gained from Lieutenant Colonel W J Buchanan's report for 1915 on the jails of the Bengal Presidency which has just come into our hands, and the comparison is not an unfair one in respect of numbers as the daily average number of prisoners is not widely different 11,311 under the care of the English Commissioners, and 14,494 in Bengal, bearing in mind however, that of the first number only about one fifth are convicts, while of the Bengalese 97 per cent are convicts There is the initial striking fact that the death rate amongst the Bengal convicts during 1915 was over 20 per 1000 being nearly three times the rate among convicts in the prisons of England and Wales Of the 264 deaths among Bengal convicts in 1915, 77 were due to dysentery 24 to malaria 18 to diarrhœa, in addition to 38 from tuberculosis and 26 from pneumonia Lieutenant-Colonel Buchanan, whilst attributing this melancholy death rate largely to the very serious overcrowding in the prisons, remarks that in the district jail of Barisal the persistent care and attention given by the medical officers has resulted in practically stamping out dysentery from this jail, but he goes on to record the very serious mortality in Dinajpur which blots the year's administration In this jail of 315 inmates there is a daily average sickness of 29 and a death rate of 119 per 1000, 18 deaths during the year being due to dysentery, 2 to malaria 4 to pneumonia and 2 to diarrhœa. In regard to this jail Lieutenant Colonel Buchanan writes "I have urgently pressed on Government the great need of a hospital here– This jail is one of the worst of the East Bengal jails, and the medical officer has not a fair chance in treating the sick drawn from an unhealthy district in the present old barrack wards used as a hospital

The standard of mental health of the prison population is not a high one for a variety of reasons The English Prison Commissioners report the number of persons in local prisons found to be insane after reception as 103 (126) and in convict prisons 36 (26), the numbers in brackets being those for the previous year Of the cases certified in local prisons three fourths were regarded as already insane on reception and another 7 showed symptoms of insanity within a month of reception The war has had a remarkable effect upon the prison mental standard on account of the absence, already noted, from the prisons of strong able bodied men The Commissioners record their belief that the country's call for men has appealed as strongly to the criminal as to other classes, and it is a remarkable fact that receptions to prison are now principally confined to the mentally as well as physically weak The Commissioners express their regret at the paralysing influence which the deficiency of State accommodation has exerted on the treatment of criminal defectives, but they look forward to the cessation of hostilities rendering possible an efficient administration of the Mental Deficiency Act The present method of dealing with the confirmed and hopeless inebriate also comes up again for censure

THE PIG AS A FOOD MIDDLEMAN

The Local Government Board and the Board of Agriculture and Fisheries are concerning themselves with the necessity for increasing the food productions of the country by the development of pig, poultry and rabbit breeding In regard to the two latter, few hygienic or dietetic problems arise But the recommendation to increase the number of pigs, and that not only in rural districts, where space is abundant and neighbours are distant, raises very different questions The hygienic aspect is at once apparent, and has led to the existence in a number of urban districts, as well as in a few rural ones, of by laws prohibiting the keeping of pigs within a prescribed distance of dwelling houses We learn, however, from a recent circular of the Local Government Board that a regulation is about to be made enabling any local authority to give permission for the keeping of pigs either generally or in particular cases, notwithstanding by laws to the contrary To those acquainted with the habits of the pig under favourable surroundings this relaxation will not appear unreasonable The pigsty often smells not because of the pig, but because of the ignorance of his keeper Provided with a small area for the purpose the pig will dispose of his excreta without any nuisance whatever and with incidental enrichment of the soil, while his sty remains cleanly It is the wholly confined pig who stinks But on the dietetic side, in recommending pig culture as an economical pastime the fact must not be lost sight of that the alimentary canal of the pig is adapted for much the same kind of food as the human child s The pig has no highly developed cæcum to deal with the conversion of cellulose into digestible carbohydrates The growing pig is a typical omnivore and ordinarily receives a large amount of nutritive material, some of which the growing child could well digest Experiments have shown that via the pig as middleman only some 25 per cent of the protein and some 45 per cent of the total energy value of the food supplied him is ultimately returned to the consumer as pork or bacon Brokerage of at least 55 per cent, which may well be largely exceeded, is charged by the pig Pig culture can afford no excuse for wasteful housekeeping, and the presence in the pig bucket of food which the family could have consumed is a disgrace to any patriotic housekeeper The inspection of the amount of household waste might well become part of the sanitary inspector's routine duties at the present time The case for pig keeping is more cogent where food refuse from hotels and institutions is in question Food waste is apparently inseparable from civilised town life, and the pig may well be employed to redeem some of this waste if proper care is given to his lodging

THE INTERNAL FORM OF HODGKIN'S DISEASE

In the *Journal of the Royal Army Medical Corps* Lieutenant T H Whittington has reported a case of the "internal" form of Hodgkin s disease of acute onset with relapsing pyrexia and signs and symptoms chiefly abdominal, which was very difficult of diagnosis and deceived the "very elect" A private aged 19 years, was admitted to a base hospital from the trenches in Flanders on Nov 21st, 1915 He looked pale and complained of pains in the soles, but nothing abnormal was seen in the feet On the 24th the abdomen was distended, slightly tender all over, and rather rigid The temperature ranged from 103° to 104° F, the tongue was dry and brown A leucocyte count showed a leucopenia of 3500 On the 27th he was sent to a hospital for infectious diseases as probably a case of enteric fever, and came under Lieutenant Whittington s care He was very pale, with a rather 'renal" appearance, and complained of headache There was occasional muttering delirium with picking at the bedclothes The pulse was very soft and occasionally dicrotic There was marked tenderness with dullness on percussion in the left hypochondrium and left lumbar regions This dullness appeared to be splenic, reaching down four finger breadths below the umbilicus, but the spleen was not felt The stools were fluid and yellow No enlarged glands were felt The serum reactions for the typhoid and paratyphoid bacilli were negative The diagnoses so far suggested were acute peritonitis, recurrent appendicitis, and typhoid fever, the last being favoured During the next week the abdominal distension diminished, enabling a firm and slightly tender spleen to be felt The hæmoglobin was only 52 per cent From Dec 2nd to 5th the temperature fell and the patient rapidly improved On the 31st he again became listless and pale, and complained of pains in the soles and toes The temperature again rose and the spleen rapidly enlarged. The temperature soon fell, only to rise again on Jan 4th, 1916, when the spleen was still more enlarged and the liver slightly so Blood examination showed 3000 white and 3,600,000 red cells per c.mm A differential count gave polymorphonuclears 80 per cent, lymphocytes 15, and large mononuclears 5 Several consultants saw the patient, and the diagnoses suggested were a typhoid relapse, splenic anæmia, and tuberculous peritonitis, but Hodgkin s disease, Malta fever, kala azar, congenital syphilis, and septicæmia were also discussed He again improved, but another relapse followed, the abdomen being distended and showing free fluid in the flanks There appeared to be an indefinite mass above the umbilicus He became very emaciated and jaundiced, —

and died on Feb 15th, 12 weeks after the onset At the necropsy much yellowish fluid was found in the abdomen The spleen was thrice the normal size and hard and showed on its surface and on section yellowish white spots An enlarged gland in the portal fissure seemed to press on the hepatic duct The retroperitoneal glands formed a large, irregularly lobulated, hard mass Some enlarged glands were found below and behind the inner ends of the clavicles Microscopic examination showed the typical appearance of Hodgkin s disease In McNalty s study of "Lymphadenoma with Relapsing Pyrexia"[1] 8 cases out of 32 are described as without enlargement of the superficial glands In only 2 of these was the duration shorter than in the present case In a man, aged 23 years, the mediastinal glands, spleen, liver, and kidneys were affected and he died after five weeks In the other the mesenteric and bronchial glands, liver, and spleen were affected, and death occurred after seven weeks The other patients lived for periods varying from 4 to 15 months

THE PARLIAMENTARY REPRESENTATION OF DUBLIN UNIVERSITY

WE published last week a letter from the Professor of Anatomy and the Professor of the Practice of Medicine in Dublin University, urging upon those of our readers who are entitled to vote for the Parliamentary representation of the University to record their support at the forthcoming election in favour of Sir Robert Woods, M D Dub, who is standing as a non party candidate Sir Robert Woods approaches the electors with the plea that he is the representative of the medical faculty of the University, which is notoriously one of the most distinguished faculties, while Mr Arthur W Samuels belongs to the profession of law which, *except in one solitary instance*, has for half a century supplied the constituency with its Parliamentary member The issue, in fact is one to be decided between the profession of medicine and the profession of law, for both candidates disclaim party views in politics Mr Samuels describes himself as "a Unionist and Imperialist," with no reference to party interests Sir Robert Woods is equally detached In answer to a correspondent he has written "I shall resist with all my power any attempt to revive the Irish controversy during the period of the war and to coerce any section of the Irish people into a settlement which it does not desire If, however, with the full and free consent of the Unionists of Ulster and the Unionist minority of Dublin and the South of Ireland, and with the full sanction of the Imperial Parliament, a real settlement of the Irish question is evolved, after the war, by the united statesmanship of both countries I shall do my best to help it in every way We wish Sir Robert Woods every success, because it is constantly brought home to us that the presence of more medical men in the House of Commons would be of great value to the country The ignorance displayed by the majority of Members of Parliament upon all medical points is illustrated by the nature of the questions in the House of Commons no less than by the way in which medical, and indeed all scientific interests are too often sacrificed to the interests of other sections of the community At the Conference of Educational Associations held at the University of London last week Sir Alfred Keogh said it was a regrettable thing to find Cabinet Ministers prominent administrators, and other people in high positions having no knowledge whatever of the elementary facts of science He had to place scientific questions before these men and he found it difficult to get low enough to reach their level Every medical Member of Parliament helps to improve the situation, and from this point of view alone Sir Robert Woods may fairly expect votes

OSTEOCHONDROMATOSIS OF JOINT CAPSULES

IN 1900 Reichel published the first description of a rare condition characterised by the appearance of multiple osteochondromas in the capsules of one or more of the joints Dr J W Kopp[1] has recently recorded three new instances of this complaint affecting the knee joints in each patient, and he has found 11 others in medical literature In 10 of the total of 14 patients the knees were involved the ankle, wrist elbow, hip, and metacarpo phalangeal joint of the middle finger have also been found affected, each in different cases In three patients, including one of Dr Kopp's, both knee joints were diseased, otherwise the osteochrondromatosis has apparently been confined to a single articulation The disease may occur at any age, and although the new growths show no sign of malignancy they may recur after their operative removal, by arthrectomy or resection of the joint, has been attempted This, no doubt, is a consequence of incomplete removal In Reichel s case the patient was a man of 36 with a very chronic and almost painless affection of the knee The joint was opened and a quantity of blood was removed from its cavity, together with two handfuls of loose cartilaginous fragments Recovery followed, shortly afterwards Reichel opened the joint again and removed a number of loose, bluish white cartilaginous fragments, but an attempt to dissect out the whole capsule of the joint, which was beset with numerous cartilaginous nodules of various sizes, was baffled by the discovery of similar nodules on the cruciate ligaments Resection showed that the articular surfaces of the femur, tibia, and patella were unaffected and that the new growths originated in the capsule of the joint Dr Kopp s first patient was a healthy student, aged 24, who came under observation in 1911 with a history of slight pains in the right knee for four years The condition was attributed to trauma of an unusual character to which the attention of neurologists may be drawn—percussion of the patella with a percussor in a wanton moment during a joyous evening The patient s gait was normal, but there were symptoms of the nipping of a foreign body in the joint The joint itself showed an unsymmetrical swelling of the synovial membrane and the suprapatellar bursa, with fluctuation and limitation of movement to about 75° Numerous free foreign bodies could be felt in it and one, the size of a grape, lying on the inner side of the patella could be moved two inches in any direction but always returned to the same place, whence it was concluded that it had a peduncle All the other joints seemed normal This patient had had comparatively little trouble with his knee when he was seen again in 191-, and he refused operation Skiagrams were taken and are reproduced by Dr Kopp in his paper They show a curious dappling of most of the area subtended by the synovial membrane but no changes in the structure of the bone or their articular surfaces Dr Kopp s second patient a man of 39 gave a history of slight trauma of the knee some 15 years before Three years later he had had symptoms pointing to the nipping of a loose body in the joint Dr Kopp found swelling of the joint and suprapatellar bursa, and in both could be felt some movable and hard foreign bodies The joint was opened under ether anæsthesia, and an incomplete arthrectomy was performed Two free foreign bodies were found in the prepatellar bursa The outer surface of the synovial membrane was found to be studded with bluish white opalescent nodules, the largest as big as a pea There was no evidence of inflammation and the synovial fluid was clear Careful examination showed that these nodules arose from the synovial membrane only, and not from bone, cartilage, ligament, or muscle The ends of the bones exhibited the appearances of arthritis deformans in its early stages The patient made a good recovery from the operation and was well satisfied with its results when he was seen again 20 months later But a couple of foreign bodies could then be felt in the immediate vicinity of the right knee joint, and Dr Kopp concludes that it also was becoming affected with osteochondromatosis The third patient was an old woman of 77 with senile dementia, who had foreign bodies in both knee joints Operation was not contemplated, but Dr Kopp decided from the physical signs and skiagrams that he had here to do with a third case of this rare disease Discussing its general diagnosis, he says that it has to be distinguished from osteoarthritis localised in some diverticulum of the joint, from the intra articular exostosis cartilaginea first described by Volkmann in 1855, from arthritis deformans, and from the osteoarthropathies met with in tabes dorsalis and syringomyelia As another possible source of confusion he mentions the fabella, a sesamoid bone appearing not rarely in the external head of the gastrocnemius The pathogenesis of osteochondromatosis is uncertain Reichel attributed it to infection, Lexer (1907) refers it to a developmental defect in the differentiation of the mesenchyma of the joint, comparable to that resulting in the growth of enchondromas about the bones of the fingers and toes Dr Kopp agrees with Lexer The neoplasms removed from his second case were examined for him by Dr de Josselin de Jong, who states that in this instance the nodules began life as minute osteomas in the capsule of the joint, and ended up as foreign bodies free in the joint, where they became covered with connective tissue and cartilage, while their bony core might develop into a calcareous mass As for the treatment indicated, Dr Kopp believes that recurrence is likely to follow arthrectomy or excision of the capsule of the joint, and that nothing short of resection of the whole joint will give a permanent cure

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[1] Quarterly Journal of Medicine, October 1911

[1] Nederl Tijdschr v Geneesk Amsterdam [illegible] 117

SANITATION AND DISEASE IN BENGAL

THE work of combating disease in India is rendered difficult by the indifference of the people to elementary hygienic precautions The annual report for 1915 recently issued by the Sanitary Commissioner of Bengal illustrates this fact in a striking manner The ravages of cholera in the Presidency during the year were very great, the number of deaths due to that disease being over 130,000, an increase of 41,000 on the total of 1914 The districts which suffered most severely were Mymensingh and Malda, and the high rate recorded is explained by the action of the people themselves Dealing with Mymensingh, the civil surgeon writes ‘ In August, when a large part of the district was under water, dead bodies of cholera patients were, in two subdivisions of the district, thrown into the flood water, which spread the disease far and wide till the end of the year These two subdivisions were responsible for 18,819 deaths out of a total of 26 662 in the whole district This record is supplemented by the account given by the civil surgeon of what occurred in Malda “From some of the bordering villages dead bodies were thrown into the river, and this contaminated the water and facilitated the spread of the disease to the villages situated on it’ It is not surprising, in view of the facts we have cited, that the Sanitary Commissioner should declare that outbreaks of cholera must be counted as annual events so long as the majority of the sources of water supply remain subject to gross contamination But even where waterworks are installed and a pure supply is forthcoming the advantages thus afforded are not universally appreciated Thus, at Berhampore, which has been provided with a pipe supply, certain classes of the inhabitants persisted in drinking unfiltered water brought from the river, with the result that 74 deaths from cholera took place among them last year, while those who availed themselves of pipe water remained immune to the disease Bengal occupies the unhappy position of being the only part of India where the death rate exceeded the birth rate in 1915 The increase in mortality was largely due to cholera and small pox, while the diminution in the birth rate is ascribed to the deficiency in rainfall in 1914, which by preventing a decline in the prices of food grains affected the vitality of the poorer classes The Government resolution on the Sanitary Commissioner's report expresses the opinion that the best prospect of permanent improvement in village sanitation lies in the widespread formation of union committees and the free exercise of their powers of local taxation The Governor agrees with the Commissioner that much immediate improvement, which would also have an educative value, could be attained through the personal interest and initiative of district officials

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THE death is announced, at the age of 90, of Jean Baptiste Auguste Chauveau, professor of comparative pathology in the Paris Natural History Museum, and one of the most famous physiologists of his time

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A MEETING of the British Hospitals Association will be held at St Bartholomew's Hospital, London, on Friday Jan 26th, at 3 30 P M, when a paper will be read by Dr W J Howarth, medical officer of health for the City of London, on the Treatment and Control of Venereal Diseases, with Special Reference to the Voluntary Hospitals *At the close* of the proceedings the annual meeting of the association will be held to appoint officers for the ensuing year

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THE Royal Institute of Public Health has arranged an admirable series of public lectures on health problems under war and after war conditions to be delivered every Wednesday afternoon at 4 P.M from Jan 17th to March 28th inclusive in the lecture room of the Institute at 37, Russell square Medical officers of health, medical practitioners, and all those engaged in public health and national services are invited to attend The first lecture, on Wednesday next, will be delivered by Dr Janet Lane Claypon on Child Welfare Work, with Sir Robert Morant in the chair Due notice of the other lectures will be given in the Diary

THE LANCET, VOL II, 1916
THE INDEX

THE Index and Title page to the volume of THE LANCET completed with the issue of Dec 30th will be ready on Jan 22nd Owing to the continued shortage in the paper supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W C, when a copy of the Index and Title page will be supplied free of charge

PRISON COMMISSIONERS' REPORT

THE report of the Commissioners of Prisons and the Directors of Convict Prisons for the year ended March 31st, 1916, which has been presented to Parliament, does not contain the usual report of the Medical Commissioners this report, along with those of the visiting chaplain and surveyor having been omitted on the recommendation of the Committee on Public Retrenchment A number of paragraphs in the report itself, however, deal with medical topics

Medical Matters Dealt with in the Report

The death rate in local prisons from natural causes was 0 77 per 1000 prisoners received, the average for the previous 25 years having been 0 49 per 1000 The death rate from natural causes in convict prisons was 8 2 per 1000 of the daily average population as compared with 6 1 for the past ten years But this apparent rise in death rate must be brought into relation with the great alteration in the age groups of the prison population An earlier paragraph explains the alteration thus —

> The enlistment of many habitual petty offenders of military age can be inferred from the fact that for the year ended March 31st, 1914, the percentage of male prisoners of the age categories over 40 received on conviction formed 40 per cent of the total population For the year ended March 31st, 1916, this percentage had risen to 49, while the actual number of prisoners received of military age had fallen from 61,739 to 19,169 during these years

The number of persons in local prisons found to be insane and certified as such after reception was 103, as compared with 126 last year and in convict prisons 36 as compared with 26 Of the 103 cases certified in local prisons 76 were found to be insane on reception and 7 exhibited symptoms of insanity within a month of reception Many of those who were in prison for some time before the usual symptoms of insanity were observed were known to be of weak intellect or mentally impaired on reception, or to have been previously insane As with the death rate so with the incidence of insanity, the figures do not reflect the normal results of prison life

The war has again had a marked effect on the average mental condition of the prison population, an effect which is described in the following interesting paragraph —

> One of the notable effects of the war on the prison population has been that the receptions are now for the most part confined to the physically and mentally weak The general standard of physique is now much inferior to that of prisoners admitted into prison in normal times, while the percentage of strong able bodied men is comparatively small There is every reason to believe that the country's call for men appealed as strongly to the criminal as to other classes and if it had been possible to place under scrutiny every case admitted into prison within military age there is little doubt but that the vast majority of cases would have been found to be physically unfit A young burglar one of a gang of five told the chaplain of a London prison that his four pals had enlisted, two had been killed and two others wounded He said he meant to go and " do his bit " as soon as he got out of prison—a promise which he faithfully observed

The number of prisoners who were released from local prisons on medical grounds exclusive of pregnancy &c but including 8 cases temporarily released under Section 17 (6) of the Criminal Justice Administration Act 1914 was 31 and from convict prisons 2. There were 4 suicides in local prisons during the year and none in convict prisons The daily average number of prisoners in hospital in local prisons was 361—225 males and 136 females—this being a proportion to the general prison population of 3 5 and 7 3 per cent respectively Thirteen cases of infectious disease were reported during the year—enteric fever, 3, erysipelas, 3, measles, 4, scarlet fever, 2, mumps, 1—as compared with 11 cases last year—viz., enteric fever, 1, chicken pox, 2, scarlet fever, 2, diphtheria 2, mumps, 1, and erysipelas, 3

Mental Deficiency Act —Convictions for Drunkenness

As in the last year's report allusion is again made to the difficulties which have arisen, owing to the outbreak of war and other causes in the exercise of the Mental Deficiency Act so far as it relates to inmates of penal institutions The Commissioners regard the record for the year under report as not an encouraging one During the year 204 prisoners—130 males and 74 females—were certified under Section 1 of the Mental Deficiency Act, as compared with 248 last year A large number of the 248 certified during 1914-15 have been received again many several times, on re conviction Orders were made by the Secretary of State, under Section 9 of the Act, in 39 cases—10 males and 29 females—and these were removed to certified institutions or in the case of some of the females, to the Farmfield State Institution In addition 26 males and 22 females were handed over to local authorities on discharge The absence of institutional accommodation for defectives, and particularly State accommodation for males, exercises, in the Commissioners' view a paralysing influence on operations under the Act as regards the disposal of criminal defectives But a more hopeful note is struck for the future

On the vexed question of the alleged increases of drunkenness among women much fresh light is thrown by an inquiry made by the Lady Inspector of Prisons into the character of the population committed for drunkenness to Holloway Prison

The inquiry showed that during the three years 1913, 1914, and 1915 10,888 committals on conviction of drunkenness were recorded against 1628 women, who, including the convictions incurred in years preceding 1913, had on their combined records a total of 30,936 convictions Of these 1628 individual prisoners—

1092 were received in	1913,	incurring that year	2768 convictions
1045	1914		3931
813	1915		4189

The average convictions, therefore per individual rose from 2 6 in the year 1913 to slightly over 5 in 1915 Amongst the 1628 women was selected a group of 25, who, at the end of 1915, had each received ten or more convictions for this offence All are stated to have been first offenders in 1913 or 1914 By the end of 1915 they had amassed a total of 353 convictions—viz , 69 in 1913 134 in 1914 and 150 in 1915 As regards first offenders in the drunkard class, the totals received in each year were 113, 113, and 37 respectively

The inquiry at Holloway thus substantiated the observations of several governors and chaplains at other prisons—viz , that a falling population is at the present time contributing more convictions per annum than was the case before the war If the average rate of convictions per annum incurred by each individual at Holloway Prison for the years 1913-14 and 1915-16 respectively be applied to the total receptions on convictions of drunkenness for the whole country a result is arrived at which shows an actual falling off of about two thirds in the numbers received for this offence

In connexion with this increased rate of convictions for drunkenness per individual the Commissioners comment on the curious fact that there should have been a great fall in the number of habitual drunkards committed to inebriate reformatories So far as the metropolis is concerned the numbers fell from 95 in 1913 to 9 in 1915 This is due in part to the war , but the failure of the Inebriates Act, 1898 to deal with the problem of habitual alcoholism must now in the Commissioners view, be admitted The Commissioners sum up the matter thus " If medical observation shows that mental causes enter into the history of the confirmed and hopeless inebriate, the Mental Deficiency Act now provides the opportunities for dealing otherwise with the repeated offence of drunkenness than by the useless and we might say senseless methods hitherto prevailing of repeated sentence to short terms of ordinary imprisonment This affords no cure—perhaps only an encouragement It is unscientific in principle, and further degrades the subject—man or woman

KING EDWARD'S HOSPITAL FUND FOR LONDON

A MEETING of the Governors and General Council of King Edward's Hospital Fund for London for the purpose of awarding grants to the hospitals, convalescent homes, and consumption sanatoria for 1916 was held on Dec 15th at St James s Palace, London

Lord IVEAGH, who presided, read a letter from the King congratulating the Council of the Fund on the distribution of £170 000 this year, £30 000 more than last year s total, and £12,500 over the previous record achieved in the years just before the war His Majesty also expressed the hope that the public would help to maintain this record.

Lord REVELSTOKE (the honorary treasurer) reported that the net receipts for the year to Dec. 11th apart from receipts on capital account had amounted to £269 526 18s 6d This included £100 000 cash received from Sir Walter Trower in respect of the residue of the estate of the late Isabella Countess of Wilton and the Fund had already had transferred to it securities amounting to over £22,000 The Finance Committee were retaining the cash uninvested so as not to hamper the discretion of the Council in deciding as to the use of the money in the event of any emergency

Sir WILLIAM COLLINS on behalf of the League of Mercy said there was hardly any reason to doubt that the League would be in a position to make for the fourth year in succession a grant of at least £14 000 to the King Edward s Hospital Fund and also to make a distribution of something like £3000 in the extra metropolitan district

Sir WILLIAM CHURCH (the chairman of the Distribution Committee) presented a report which stated that the sum available for distribution amongst the London hospitals was £162 500 as against £133 500 in 1915 This was the largest sum that has ever been distributed by the Fund amongst the hospitals, being an increase of £29 000 over the last two years, and £11,500 over the previous maximum of £151,000 which was reached in the years immediately preceding the war The increase in grants in aid of maintenance was £28 075 and became possible because of the postponement of building schemes and the reduction of grants towards capital expenditure Of the capital grants of £19 075 recommended this year only £6525 was on account of schemes begun since the outbreak of war on the ground of exceptional urgency, the balance had been devoted to relieving hospitals of capital liabilities incurred before the war They had as far as possible distributed the increased grants in proportion to the probable urgency of need in 1916 and had given rather greater weight than usual to the more permanent elements which affected a hospital's power to stand increased financial strain, such as the relative amount of fixed income and the relative amount of available reserve funds, but the actual results of 1916 could not be taken into account until the next distribution The number of hospitals applying for grants was 107 being three in excess of last year The committee Sir William Church continued received yearly evidence of the increasing work done by the voluntary hospitals in the cure or prevention of disease in coöperation with State or municipal authorities, apart from the treatment of naval and military patients This was one of the numerous ways in which the hospitals took their part in promoting public health. The latest development in this direction was the preparation by various hospitals of schemes for the treatment of venereal diseases in coöperation with the Local Government Board and the London County Council in accordance with the recommendations of the recent Royal Commission. In one case, that of the London Lock Hospital an application for a capital grant in aid of sanitary and other improvements at the female hospital had been received and in view of the importance of increasing the efficiency of this hospital in these respects the committee recommended a substantial grant towards the sanitary improvements The committee further recommended that the Council which had already by large grants enabled the Male Lock Hospital to be brought thoroughly up to date, should also offer substantial assistance towards an approved scheme for the reconstruction of the Female Lock Hospital

Mr F M FRY then presented the list of awards which has already been published in the press The largest individual grant, £15,000, has been given to the London Hospital, while Guy s Hospital follows with £9000 The smallest grants (£25) go to some of the cottage hospitals

Dr EDWIN FRESHFIELD (the chairman of the Convalescent Homes Committee) presented a report stating that the sum available for distribution amongst convalescent homes and consumption sanatoria was £7500, as against £6500 in 1915 the largest sum that had ever been placed at the disposal of the Convalescent Homes Committee. The number of applications eligible for consideration amounted to 42 from convalescent homes and 9 from consumption sanatoria, as against 41 and 9 respectively last year The committee had made a slight increase this year in the number of beds reserved at consumption sanatoria for the use of patients in London hospitals owing to the fact that certain women's beds no longer available had been replaced by children's beds The accommodation thus secured amounted to 53 beds at six sanatoria

The list of grants recommended by the Convalescent Homes Committee having been presented by Mr J G GRIFFITHS,

Lord IVEAGH, in moving the adoption of the report and awards said it was with great satisfaction that they found themselves able to make a record distribution, and this apart from supplementary grants rendered possible by the generosity of Sir Ernest Cassel It was one of the functions of the Fund to serve as a steadying influence on the finances of the hospitals The amount which the hospitals would get from the Fund in grants to maintenance, even in this record year, was only a little more than one ninth of the total ordinary expenditure, while the very large increase in the maintenance grants would not cover the increase in their ordinary expenditure since the war began, reckoning only the year 1915 There was no doubt moreover that the need of the hospitals would continue to grow in the near future The burden of 1916 would inevitably be greater and if the Fund was to continue to do its part an increased distribution might become desirable He wished to express the indebtedness of the Fund for the legacies of £20 000 received, under the will of the late Lady Brownlow, on the death of Sir Charles Brownlow, and £10 000 very kindly allocated to the Fund by the executors of the late Thomas Stephen Whitaker in the exercise of their discretionary power

The Duke of NORFOLK having seconded the motion, the adoption of the reports was carried unanimously

A meeting of the General Council of King Edward's Hospital Fund for London was held on Monday afternoon Jan 8th, at the offices of the Fund, 7, Walbrook, E C There were present the Speaker of the House of Commons (the Right Hon James W Lowther, M P), in the chair, the Earl of Bessborough, the Viscount Knutsford, Lord Burnham, Lord Somerlayton (honorary secretary), the President of the Royal College of Physicians (Dr Frederick Taylor), the Right Hon C Stuart-Wortley K C, M P, Sir William S Church, Bart, Sir Owen Philipps, M.P, Sir Horace Marshall, Mr Frederick M Fry (honorary secretary), Mr John G Griffiths (honorary secretary), Mr Robert Fleming, Dr Edwin Freshfield, Mr W J H. Whittall The appointments were announced of Mr W J H Whittall to the General Council and of Sir Edward Hope, K.C B, to the Executive Committee The resolutions providing for the work of the Fund for 1917, which were approved at the meeting of the Governors and General Council, were formally adopted

MEDICINE AND THE LAW

Humphreys v Miller, Rendell, and Harbord

IN this case as will be remembered, it was shown that a lodging house keeper let rooms to Mr H O Miller, who resided there with his daughter until his death from leprosy, being attended in his last illness by Mr E A Harbord The plaintiff afterwards brought an action tried by Mr Justice Darling with a special jury, claiming damages against the executor of the deceased his daughter, and Mr Harbord, on the ground that there was an implied warranty when the rooms were taken that Mr Miller was not suffering from any disease which would make it unfit or dangerous for him to occupy them or would prevent them from being in future let as furnished rooms, that Miss Miller knew that her father was not a fit person to occupy the rooms, and that the father the daughter, and Mr Harbord concealed the fact from the plaintiff in consequence of which the rooms were let After a great deal of evidence had been given the jury returned answers in the plaintiff s favour to all the questions put to them finding as facts that Mr Miller when he took the rooms was liable to infect persons and furniture with leprosy, and that he and his daughter knew it, that the disease was communicable by infection or contagion in England, that Miss Miller and Mr Harbord fraudulently misrepresented Mr Miller as fit to occupy the rooms, that they concealed from the plaintiff that Mr Miller was suffering from a disease which made him unfit and dangerous to occupy the rooms, that Mr Harbord acting as agent for the other two, stated that Mr Miller was not suffering from any contagious or infectious disease, and that this was untrue, as he and Miss Miller knew, that all three conspired to conceal the state of Mr Miller from the plaintiff, and made false statements with that object Damages to the extent of £250 were awarded. Counsel for Mr Harbord asked for judgment for his client *non obstante veredicto*, on the ground that there was no obligation upon him to disclose his patient's condition to the plaintiff and no evidence that he did not believe that in this country leprosy was neither infectious nor contagious After further argument to the effect that there was no evidence to support the jury s findings, Mr Justice Darling gave judgment for the defendants

The Court of Appeal has since affirmed the decision of Mr Justice Darling Lord Justice Swinfen Eady held that there is no foundation in law for the argument that there is a warranty or condition that when a person takes furnished rooms he shall not be suffering from any disease which may be infectious or contagious, that there was no evidence that Miss Miller knew that her father was suffering from leprosy or from any infectious or contagious disease With regard to Mr Harbord the evidence showed that he had nothing to do with the original taking of the rooms, he had told the landlady when questioned by her, that the deceased was not suffering from an infectious disease, but had warned her to be careful and that no one else was to use the lavatory used by the patient According to the evidence, the risk of infection with leprosy in this country was practically *nil* and that was Mr Harbord s view He honestly expressed the opinion that he held, and was under no obligation to divulge to the lodging house keeper anything with regard to his patient Moreover, the plaintiff could have determined the tenancy by giving a week s notice to her tenants His lordship held that in view of the above Mr Justice Darling was right in holding that there was no evidence upon which to base any finding which involved either of the defendants in liability to the plaintiff Lord Justice Bankes in concurring, said 'I see no evidence whatever on which it can be suggested as against this medical man that he did not honestly believe that speaking practically, there was no danger either of infection or contagion from this particular disease The appeal was therefore dismissed That this case should have ended as it did, and that Mr Justice Darling s judgment should have been upheld is eminently satisfactory and the medical profession as well as Mr Harbord is to be congratulated upon the result arrived at The charge made in claiming damages was a charge of deliberate falsehood and conspiracy involving known danger to the health of innocent people for the convenience and in the interest of the medical man s patient It is established that of all this there was no evidence The fact that a case of leprosy was involved with the exposition of medical opinion as to this disease added incidental interest to the trial

Coroners Juries in War Time

Three sane and useful suggestions have been made by Mr S Ingleby Oddie in a letter to the *Times* for economising money and men s time in connexion with inquests He recommends that the coroner should be enabled by an Act of Parliament (1) to hold inquests without a jury, or (2) to hold them with a jury of seven or (3) to order post mortem examinations before deciding that an inquest is to be held Of these it will probably be agreed by many that the adoption of numbers (1) and (3) not alternatively but simultaneously would be a useful innovation and if such adoption were to be for the period of the war only would constitute an experiment which need not be continued if it should prove unsuccessful The third suggestion deals with a recommendation often made by coroners which found [illegible] support at the hands of the Departmental Committee on Coroner Law in 1910 The first should be favourably considered by those who remember that many coroners are, and all might be, medical men with sufficient legal training for the performance of a coroner s duties so far as they entail knowledge of law It may be pointed out that the economy of money, time, and man power effected would be on a more important scale than that involved in the recent abolition of reports of certifying surgeons on accidents which had a similar object in view Also it would not involve injustice to anyone whose functions would be dispensed with, or any loss of protection to the persons on whose behalf they are now exercised

The Slingsby Case

In this case a declaration was claimed under the Legitimacy Declaration Act 1858 with regard to the alleged child of Commander C H R Slingsby It will be remembered that Mr Justice Bargrave Deane found that the child was borne by Mrs Slingsby at San Francisco, the allegation on the other side being that he had been procured for her from another woman The Court of Appeal held that the evidence did not justify the finding of Mr Justice Bargrave Deane, and the appeal on behalf of the child to the House of Lords has now been dismissed A curious feature of the case consisted in the calling in of Sir George Frampton, the well known sculptor to express an opinion upon the question of physical resemblance on the part of the child to the parents who claimed him as theirs Sir George Frampton was of the opinion that a strong likeness existed, and the judge appears to have thought so too As to this Lord Loreburn, in the House of Lords, expressed the opinion that Mr Justice Bargrave Deane s views of the evidence must have unconsciously been influenced by Sir George Frampton, while Lord Sumner said that any weight that might be attached to likeness was overborne by other evidence

PUBLIC HEALTH OF MANCHESTER

IN his recently published annual report Dr James Niven gives an instructive account of the health of the city of Manchester in the year 1915 and of the various preventive measures carried out under his direction, special reference being made to the administrative action taken locally for the control of tuberculosis The appearance of this volume shortly after the issue of Dr W H Hamer s report[1] for the same period affords opportunity for comparing the statistical records and sanitary defences of a well equipped provincial city with corresponding data for the metropolis

The recorded death rate" of Manchester was equal to 16 31 per 1000 at all ages or 1 42 below the decennial average rate The tabular records submitted are less complete than previously and there is great doubt as to the total population of the city Owing to the large number of enlistments the age constitution of the civil population has seriously changed Nor is this change confined to the male sex, since recent alterations of occupation have affected the distribution of women also Either for reasons of economy in war time or else because of uncertainty attaching to population estimates many of the usual tables are omitted in this report But this omission has to some extent been compensated for by the Registrar General who publishes detailed periodical returns of mortality and of disease notification in each of the great British towns[2]

The national records deal with the entire areas of the several towns but in the present report essential particulars are given for each of the statistical divisions of the city From these we learn that as compared with the decennial average, the crude death rate in 1915 shows a marked improvement in North Manchester and a considerable improvement in South Manchester but a falling off in the old Manchester township This supports the conclusion previously reached that the poorer classes have suffered disproportionally in the last two years Nevertheless the average position of the Manchester working classes is believed to have improved and there has been less pauperism in 1915 than in the two preceding years In order to avoid the uncertainty attaching to estimates of population, the actual deaths (in place of the death-rates) from the chief causes in the last three years are summarised in an instructive table. The most striking feature in this table is the great increase in the deaths from tuberculous phthisis and from heart disease in 1915 as compared with the year preceding the war. This abrupt rise, especially in the case of the first-named disease, may be due in part to the strain induced by war conditions and in part to the lack of new dwellings for the growing population. Balancing the gains and losses of life during 1915 in comparison with those in the previous ten years, the largest gains are found to be under the heads of pneumonia, whooping-cough, nervous disease, and diarrhoea. The losses are greatest under the heads of cancer, heart disease, and old age.

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[1] THE LANCET [illegible] ii 37

[2] THE LANCET 1 [illegible] ii 1

Infant mortality.—Inasmuch as the mortality in the first year after birth is based, not on the numbers estimated to be living at that age, but on the number of infants born alive during the year, it is obviously unaffected by uncertainties as to population. It is also independent of the birth-rate. In the year under notice infant mortality in Manchester was at the rate of 129 per 1000 births, as compared with 112 in London, 117 in the 96 great towns, and 110 in England and Wales.[1] Infant mortality in the first three months of life was lower than in any previous year. It was also low in the second three months, but in the last half of the first year it was comparatively high. Compared with the preceding three years we learn that during the first three months after birth proportionally fewer deaths occurred in 1915 from convulsions, premature birth, atrophy, and suffocation—i.e., from that class of disease which it is our main object to prevent. In the second three months the result is less favourable. During the last half of the first year of life there were in 1915 relatively fewer deaths from whooping-cough, tuberculosis, and convulsions, but relatively more from measles, diphtheria, lung disease, and violence, the excess under lung disease being probably determined by measles prevalence.

Administrative Control of Pulmonary Tuberculosis.

Towards the close of last century a national movement was initiated for the suppression of tuberculosis. In a recent classical work entitled "A Campaign against Consumption,"[2] by the late Dr. Arthur Ransome, then professor of public health in the Victoria University, the history of this movement was traced to its local origin half a century ago. The author asserts that the honour of being the first authority to suggest and eventually to adopt measures for the suppression of this scourge may fairly be claimed by Manchester. Dr. Ransome's own entrance into the campaign dates back to the year 185[illegible] and to the establishment in Manchester and Salford of a weekly return of common diseases, prominent among which was phthisis. There is good reason to believe that these returns, voluntarily contributed by about 30 medical residents for more than 12 consecutive years, were not merely the forerunners but powerful incentives to the more complete notification returns which are now everywhere required under statute law. In 1884 a large area of old and dilapidated dwellings in Ancoats was officially condemned as unfit for human habitation. This area was computed to afford shelter for 5500 persons of the poorest class, who on a five years' average were succumbing to phthisis at the rate of 5·3 per 1000 living. The buildings on this area, and other insanitary areas in the older parts of the city, have recently been demolished by the municipality, and better house accommodation has been provided for the displaced occupants.

Notification and treatment of phthisis.—Dr. Niven will be recognised by his medical colleagues generally as one of the earliest among advocates of the compulsory notification of phthisis, as well as of its preventive treatment, as a matter of State policy. He is to be congratulated on the large measure of success he has achieved in Manchester in dealing with the administrative difficulties of the crusade—difficulties which were at one time regarded as insurmountable by many of his contemporaries. Systematic notification of phthisis is still on its trial in Manchester, London, and some other towns, and as local experience accumulates the results should materially influence administrative action. In the present report there appears a standard table showing the number of primary notifications during the year. This table is identical in form with that contained in Dr. Hamer's London report, and we may presume that the respective health officers will avail themselves of this and similar methods for the comparison of future results. The usual table showing the facts and rates of notification in the several districts has been prepared for 1915, but is not inserted in this report. The notification rate exceeds the death-rate in various degrees. The case of Withington is especially notable. In this residential district the deaths steadily outnumber the reported cases, pointing to a failure in the duty of notification. The earliest records available respecting the results of notification are those for 1899—since which year more than 28 000 phthisical patients have been visited by the staff. In 25 000 cases sputum has been examined, with positive results in one-third of the cases. Not fewer than 27 105 of the patients have been isolated in hospital and the houses disinfected after removal of the patients.

The loss of life from phthisis in 1915 was in excess of the average. It was 1·76 per 1000 living of both sexes at all ages, and was above the mean rate in the preceding ten years by 0·09 per 1000. It was also above the rate in the County of London by 0·16 per 1000. When the total deaths in a single year are distributed over several age-groups in both sexes the rate of mortality for each separate group cannot usefully be compared with corresponding rates for previous years. Nevertheless the numbers of deaths at each age may properly be compared, and thus an approximate idea of the course of events may be presented. By this means we learn that *among males* the phthisis deaths were more numerous in 1915 than in any of the preceding ten years. (This statement relates exclusively to the civil population, which includes Manchester soldiers discharged on account of phthisis.) The most marked increase occurs at ages 15–19, 20–24, and 35–44, but not at ages 25–34, nor at ages under 15. *Among females* also there is a corresponding excess in the deaths, the increase being nearly as great as among males. The greatest increase occurs at ages 25–34. It is possible that the additional stress of work now thrown on both sexes and the increased demand for workers in the prime of life may account for the great addition to the death toll. When the deaths from bronchitis are examined similarly they present parallel rises to those from phthisis, both among males and females. Pneumonia shows no such increase; on the contrary, among males the deaths thus returned in 1915 were fewer than in any of the preceding ten years. Among females they were fewer than in any of the ten except 1905.

Milk and tuberculosis.—The milk supply of Manchester is derived from about 69 farms, chiefly in the counties of Cheshire, Derbyshire, Staffordshire, and Lancashire. During the year 91 samples of milk were examined, and in a useful table the percentages are given of farmers in each county whose milk was found to cause tuberculosis. It is noteworthy that none of the farmers in Derbyshire or in Staffordshire sent tuberculous milk to the city. In Dr. Niven's report for 1913 particulars were given of the successful manner in which the work of keeping a herd of cows free from tuberculosis is being carried on. The milk produced by this herd is still supplied to the large fever hospital at Monsall and to the sanatorium at Baguley.

Poverty in relation to phthisis.—A most instructive table is inserted giving a classification of the cases whose family income fell short of a standard rate according to the ascertained "shortage," and showing the institutional assistance obtained for these patients. The standard was based on that given by Mr. B. Rowntree in his book on poverty. The table indicates under several headings the numbers living and the numbers dead at the end of 1915, the numbers admitted to the several hospitals, and the number receiving institutional assistance. It would appear from this table that in 1915 phthisis was more fatal to the poorer classes of cases than in previous years.

Report of the Tuberculosis Officer.

A valuable report by Dr. D. P. Sutherland is appended to that of the medical officer of health. It contains minute details of the manifold operations of his department in the course of the year. We can only briefly refer to the analysis of cases in which the results of institutional and dispensary treatment are shown. In the "residential" that the father the daughter, and Mr Harbord concealed the fact from the plaintiff in consequence of which the rooms were let After a great deal of evidence had been given the jury returned answers in the plaintiff's favour to all the questions put to them finding as facts that Mr Miller when he took the rooms was liable to infect persons and furniture with leprosy, and that he and his daughter knew it, that the disease was communicable by infection or contagion in England, that Miss Miller and Mr Harbord fraudulently misrepresented Mr Miller as fit to occupy the rooms, that they concealed from the plaintiff that Mr Miller was suffering from a disease which made him unfit and dangerous to occupy the rooms, that Mr Harbord acting as agent for the other two, stated that Mr Miller was not suffering from any contagious or infectious disease, and that this was untrue, as he and Miss Miller knew, that all three conspired to conceal the state of Mr Miller from the plaintiff, and made false statements with that object Damages to the extent of £250 were awarded. Counsel for Mr Harbord asked for judgment for his client *non obstante veredicto*, on the ground that there was no obligation upon him to disclose his patient's condition to the plaintiff and no evidence that he did not believe that in this country leprosy was neither infectious nor contagious After further argument to the effect that there was no evidence to support the jury's findings, Mr Justice Darling gave judgment for the defendants

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[1] See the [illegible] Registrar-General's [illegible] to be found [illegible] quarter [illegible]

[2] Published in [illegible] by the Cambridge University Press. Pp. [illegible] Price 1s. 6d.

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[1] THE LANCET [illegible] 857

[2] THE LANCET [illegible]

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that the father, the daughter, and Mr Harbord concealed the fact from the plaintiff in consequence of which the rooms were let. After a great deal of evidence had been given the jury returned answers in the plaintiff's favour to all the questions put to them, finding as facts that Mr Miller when he took the rooms was liable to infect persons and furniture with leprosy, and that he and his daughter knew it, that the disease was communicable by infection or contagion in England, that Miss Miller and Mr Harbord fraudulently misrepresented Mr Miller as fit to occupy the rooms, that they concealed from the plaintiff that Mr Miller was suffering from a disease which made him unfit and dangerous to occupy the rooms, that Mr Harbord, acting as agent for the other two, stated that Mr Miller was not suffering from any contagious or infectious disease, and that this was untrue, as he and Miss Miller knew, that all three conspired to conceal the state of Mr Miller from the plaintiff and made false statements with that object. Damages to the extent of £250 were awarded. Counsel for Mr Harbord asked for judgment for his client *non obstante veredicto*, on the ground that there was no obligation upon him to disclose his patient's condition to the plaintiff and no evidence that he did not believe that in this country leprosy was neither infectious nor contagious. After further argument to the effect that there was no evidence to support the jury's findings, Mr Justice Darling gave judgment for the defendants.

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[3] See table on p [illegible] of Registrar-General's return for the fourth quarter of [illegible]

[4] Published in 1915 by the Cambridge University Press Pp 253 Price 10s 6d.

The Court of Appeal has since affirmed the decision of Mr Justice Darling. Lord Justice Swinfen Eady held that there is no foundation in law for the argument that there is a warranty or condition that when a person takes furnished rooms he shall not be suffering from any disease which may be infectious or contagious, that there was no evidence that Miss Miller knew that her father was suffering from leprosy or from any infectious or contagious disease. With regard to Mr Harbord the evidence showed that he had nothing to do with the original taking of the rooms, he had told the landlady, when questioned by her, that the deceased was not suffering from an infectious disease, but had warned her to be careful and that no one else was to use the lavatory used by the patient. According to the evidence, the risk of infection with leprosy in this country was practically *nil* and that was Mr Harbord's view. He honestly expressed the opinion that he held and was under no obligation to divulge to the lodging house keeper anything with regard to his patient. Moreover, the plaintiff could have determined the tenancy by giving a week's notice to her tenants. His lordship held that in view of the above Mr Justice Darling was right in holding that there was no evidence upon which to base any finding which involved either of the defendants in liability to the plaintiff. Lord Justice Bankes, in concurring, said "I see no evidence whatever on which it can be suggested as against this medical man that he did not honestly believe that, speaking practically, there was no danger either of infection or contagion from this particular disease." The appeal was therefore dismissed. That this case should have ended as it did, and that Mr Justice Darling's judgment should have been upheld is eminently satisfactory, and the medical profession as well as Mr Harbord is to be congratulated upon the result arrived at. The charge made in claiming damages was a charge of deliberate falsehood and conspiracy involving known danger to the health of innocent people for the convenience and in the interest of the medical man's patient. It is established that of all this there was no evidence. The fact that a case of leprosy was involved with the exposition of medical opinion as to this disease added incidental interest to the trial.

Coroners' Juries in War Time

Three [illegible] and useful suggestions have been made by Mr S Ingleby Oddie in a letter to the *Times* for economising money and men's time in connexion with inquests. He recommends that the coroner should be enabled by an Act of Parliament (1) to hold inquests without a jury or (2) to hold them with a jury of seven or (3) to order post mortem examinations before deciding that an inquest is to be held. Of these it will probably be agreed by many that the adoption of numbers (1) and (3) not alternatively but simultaneously would be a useful innovation, and if such adoption were to be [illegible] to the period of the war only would constitute an experiment which need not be continued if it should prove unsuccessful. The third suggestion deals with a recommendation often made by coroners which found strong support at the hands of the Departmental Committee on Coroners Law in 1910. The first should be favourably considered by those who remember that many coroners are and all might be medical men with sufficient legal training for the performance of a coroner's duties so far as they entail knowledge of law. It may be pointed out that the economy of money, time, and man power effected would be on a more important scale than that involved in the recent abolition of reports of certifying surgeons on accidents which had a similar object in view. Also it would not involve injustice to anyone whose functions would be dispensed with, or any loss of protection to the persons on whose behalf they are now exercised.

The Slingsby Case

In this case a declaration was claimed under the Legitimacy Declaration Act, 1858, with regard to the alleged child of Commander C H R Slingsby. It will be remembered that Mr Justice Bargrave Deane found that the child was borne by Mrs Slingsby at San Francisco, the allegation on the other side being that he had been procured for her from another woman. The Court of Appeal held that the evidence did not justify the finding of Mr Justice Bargrave Deane, and the appeal on behalf of the child to the House of Lords has now been dismissed. A curious feature of the case consisted in the calling in of Sir George Frampton, the well known sculptor, to express an opinion upon the question of physical resemblance on the part of the child to the parents who claimed him as theirs. Sir George Frampton was of the opinion that a strong likeness existed, and the judge appears to have thought so too. As to this Lord Loreburn, in the House of Lords, expressed the opinion that Mr Justice Bargrave Deane's views of the evidence must have unconsciously been influenced by Sir George Frampton, while Lord Sumner said that any weight that might be attached to likeness was overborne by other evidence.

PUBLIC HEALTH OF MANCHESTER

IN his recently published annual report Dr James Niven gives an instructive account of the health of the city of Manchester in the year 1915 and of the various preventive measures carried out under his direction, special reference being made to the administrative action taken locally for the control of tuberculosis. The appearance of this volume shortly after the issue of Dr W H Hamer's report[1] for the same period affords opportunity for comparing the statistical records and sanitary defences of a well equipped provincial city with corresponding data for the metropolis.

The "recorded death rate" of Manchester was equal to 16·31 per 1000 at all ages, or 1·42 below the decennial average rate. The tabular records submitted are less complete than previously and there is great doubt as to the total population of the city. Owing to the large number of enlistments, the age constitution of the civil population has seriously changed. Nor is this change confined to the male sex, since recent alterations of occupation have affected the distribution of women also. Either for reasons of economy in war time or else because of uncertainty attaching to population estimates many of the usual tables are omitted in this report. But this omission has to some extent been compensated for by the Registrar General, who publishes detailed periodical returns of mortality and of disease notification in each of the great British towns.[2]

The national records deal with the entire areas of the several towns, but in the present report essential particulars are given for each of the statistical divisions of the city. From these we learn that as compared with the decennial average the crude death rate in 1915 shows a marked improvement in North Manchester and a considerable improvement in South Manchester, but a falling off in the old Manchester township. This supports the conclusion previously reached that the poorer classes have suffered disproportionally in the last two years. Nevertheless the average position of the Manchester working classes is believed to have improved, and there has been less pauperism in 1915 than in the two preceding years. In order to avoid the uncertainty attaching to estimates of population the actual deaths (in place of the death rates) from the chief causes in the last three years are summarised in an instructive table The most striking feature in this table is the great increase in the deaths from tuberculous phthisis and from heart disease in 1915 as compared with the year preceding the war This abrupt rise, especially in the case of the first named disease, may be due in part to the strain induced by war conditions and in part to the lack of new dwellings for the growing population. Balancing the gains and losses of life during 1915 in comparison with those in the previous ten years, the largest gains are found to be under the heads of pneumonia, whooping cough nervous disease, and diarrhoea. The losses are greatest under the heads of cancer, heart disease, and old age

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[1] THE LANCET, 1916, ii, [illegible]

[2] THE LANCET, [illegible]

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Three sane and useful suggestions have been made by Mr S Ingleby Oddie in a letter to the *Times* for economising money and men s time in connexion with inquests He recommends that the coroner should be enabled by an Act of Parliament (1) to hold inquests without a jury, or (2) to hold them with a jury of seven or (3) to order post-mortem examinations before deciding that an inquest is to be held Of these it will probably be agreed by many that the adoption of numbers (1) and (3) not alternatively but simultaneously would be a useful innovation, and if such adoption were to be for the period of the war only would constitute an experiment which need not be continued if it should prove unsuccessful The third suggestion deals with a recommendation often made by coroners which found strong support at the hands of the Departmental Committee on Coroners' Law in 1910 The first should be favourably considered by those who remember that many coroners are, and all might be medical men with sufficient legal training for the performance of a coroner s duties so far as they entail knowledge of law It may be pointed out that the economy of money, time, and man power effected would be on a more important scale than that involved in the recent abolition of reports of certifying surgeons on accidents which had a similar object in view Also it would not involve injustice to anyone whose functions would be dispensed with, or any loss of protection to the persons on whose behalf they are now exercised

The Slingsby Case

In this case a declaration was claimed under the Legitimacy Declaration Act, 1858 with regard to the alleged child of Commander C H R Slingsby It will be remembered that Mr Justice Bargrave Deane found that the child was borne by Mrs Slingsby at San Francisco the allegation on the other side being that he had been procured for her from another woman The Court of Appeal held that the evidence did not justify the finding of Mr Justice Bargrave Deane, and the appeal on behalf of the child to the House of Lords has now been dismissed A curious feature of the case consisted in the calling in of Sir George Frampton, the well known sculptor to express an opinion upon the question of physical resemblance on the part of the child to the parents who claimed him as theirs Sir George Frampton was of the opinion that a strong likeness existed, and the judge appears to have thought so too As to this Lord Loreburn, in the House of Lords, expressed the opinion that Mr Justice Bargrave Deane's views of the evidence must have unconsciously been influenced by Sir George Frampton, while Lord Sumner said that any weight that might be attached to likeness was overborne by other evidence

PUBLIC HEALTH OF MANCHESTER

IN his recently published annual report Dr James Niven gives an instructive account of the health of the city of Manchester in the year 1915 and of the various preventive measures carried out under his direction, special reference being made to the administrative action taken locally for the control of tuberculosis The appearance of this volume shortly after the issue of Dr W H Hamer s report[1] for the same period affords opportunity for comparing the statistical records and sanitary defences of a well equipped provincial city with corresponding data for the metropolis

The recorded death rate" of Manchester was equal to 16 31 per 1000 at all ages, or 1 42 below the decennial average rate The tabular records submitted are less complete than previously and there is great doubt as to the total population of the city Owing to the large number of enlistments, the age constitution of the civil population has seriously changed Nor is this change confined to the male sex, since recent alterations of occupation have affected the distribution of women also Either for reasons of economy, in war time, or else because of uncertainty attaching to population estimates many of the usual tables are omitted in this report But this omission has to some extent been compensated for by the Registrar General, who publishes detailed periodical returns of mortality and of disease notification in each of the great British towns[2]

The national records deal with the entire areas of the several towns but in the present report essential particulars are given for each of the statistical divisions of the city From these we learn that, as compared with the decennial average, the crude death rate in 1915 shows a marked improvement in North Manchester and a considerable improvement in South Manchester, but a falling off in the old Manchester township This supports the conclusion previously reached that the poorer classes have suffered disproportionally in the last two years Nevertheless, the average position of the Manchester working classes is believed to have improved, and there has been less pauperism in 1915 than in the two preceding years In order to avoid the uncertainty attaching to estimates of population the actual deaths (in place of the death rates) from the chief causes in the last three years are summarised in an instructive table The most striking feature in this table is the great increase in the deaths from tuberculous phthisis and from heart disease in 1915, as compared with the year preceding the war This abrupt rise especially in the case of the first-named disease, may be due in part to the strain induced by war conditions and in part to the lack of new dwellings for the growing population. Balancing the gains and losses of life during 1915 in comparison with those in the previous ten years, the largest gains are found to be under the heads of pneumonia, whooping cough, nervous disease, and diarrhœa The losses are greatest under the heads of cancer, heart disease, and old age

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[1] THE LANCET 1916, ii 837
[2] THE LANCET 1916 ii 1024

Infantile mortality—Inasmuch as the mortality in the first year after birth is based, not on the numbers estimated to be living at that age, but on the number of infants born alive during the year, it is obviously unaffected by uncertainties as to population It is also independent of the birth rate In the year under notice infant mortality in Manchester was at the rate of 129 per 1000 births as compared with 112 in London 117 in the 96 great towns and 110 in England and Wales[3] Infant mortality in the first three months of life was lower than in any previous years It was also low in the second three months but in the last half of the first year it was comparatively high Compared with the preceding three years, we learn that during the first three months after birth proportionally fewer deaths occurred in 1915 from convulsions premature birth atrophy, and suffocation—i e. from that class of disease which it is our main object to prevent In the second three months the relation is less favourable During the last half of the first year of life there were in 1915 relatively fewer deaths from whooping cough, tuberculosis, and convulsions but relatively more from measles, diphtheria, lung disease and violence the excess under lung disease being probably determined by measles prevalence

Administrative Control of Pulmonary Tuberculosis

Towards the close of last century a national movement was initiated for the suppression of tuberculosis In a recent classical work[4] entitled " A Campaign against Consumption " by the late Dr Arthur Ransome then professor of public health in the Victoria University the history of that movement was traced to its local origin half a century ago The author asserts that the honour of being the first authority to suggest and eventually to adopt measures for the suppression of this scourge may fairly be claimed by Manchester Dr Ransome's own entrance into the campaign dates back to the year 1860, and to the establishment in Manchester and Salford of a weekly return of common diseases, prominent among which was phthisis There is good reason to believe that these returns voluntarily contributed by about 30 medical residents for more than 12 consecutive years were not merely the forerunners but powerful incentives to the more complete notification returns which are now everywhere required under statute law In 1884 a large area of old and dilapidated dwellings in Ancoats was officially condemned as unfit for human habitation. This area was supposed to afford shelter for 5600 persons of the poorest class who on a five years average were succumbing to phthisis at the rate of 5 3 per 1000 living The buildings on this area and other insanitary areas in the older parts of the city have recently been demolished by the municipality and better house accommodation has been provided for the displaced occupants

Notification of tuberculous phthisis—Dr Niven will be recognised by his medical colleagues generally as one of the earliest among advocates of the compulsory notification of phthisis as well as of its preventive treatment, as a matter of State policy He is to be congratulated on the large measure of success he has achieved in Manchester in dealing with the administrative difficulties of the crusade—difficulties which were at one time regarded as insurmountable by many of his contemporaries Systematic notification of phthisis is still on its trial in Manchester London and some other towns and as local experience accumulates the results should materially influence administrative action In the present report there appears a standard table showing the number of primary notifications during the year This table is identical in form with that contained in Dr Hamer s London report, and we may presume that the respective health officers will avail themselves of this and similar methods for the comparison of future results The usual table showing the facts and rates of notification in the several districts has been prepared for 1915, but is not inserted in this report The *notification rate* exceeds the *death-rate* in various degrees The case of Withington is especially notable In this residential district the deaths steadily outnumber the reported cases, pointing to a failure in the duty of notification The earliest records available respecting the results of notification are those for 1899—since which year more than 28,000 phthisical patients have been visited by the staff In 25,000 cases sputum has been examined with positive results in one third of the cases Not fewer than 27 106 of the patients have been isolated in hospital and the houses disinfected after removal of the patients

The loss of life from phthisis in 1915 was in excess of the average It was 1 76 per 1000 living of both sexes at all ages, and was above the mean rate in the preceding ten years by 0 09 per 1000 It was also above the rate in the County of London by 0 16 per 1000 When the total deaths in a single year are distributed over several age groups in both sexes the *rate of mortality* for each separate group cannot usefully be compared with corresponding rates for previous years Nevertheless the *number of deaths* at each age may properly be compared, and thus an approximate idea of the course of events may be presented By this means we learn that *among males* the phthisis deaths were more numerous in 1915 than in any of the preceding ten years (This statement relates exclusively to the civil population, which includes Manchester soldiers discharged on account of phthisis) The most marked increase occurs at ages 15–19, 20–24 and 35–74 but not at ages 25–34 nor at ages under 15 *Among females* also there is a corresponding excess in the deaths, the increase being nearly as great as among males The greatest increase occurs at ages 25–34 It is possible that the additional stress of work now thrown on both sexes, and the inordinate demand for workers in the prime of life may account for the great addition to the death toll When the deaths from bronchitis are examined similarly, they present parallel rises to those from phthisis both among males and females Pneumonia shows no such increase, on the contrary among males the deaths thus returned in 1915 were fewer than in any of the preceding ten years Among females they were fewer than in any of the ten except 1906

Milk and tuberculosis—The milk supply of Manchester is derived from about 69 farms chiefly in the counties of Cheshire Derbyshire, Staffordshire, and Lancashire During the year 91 samples of milk were examined and in a useful table the percentages are given of farmers in each county whose milk was found to cause tuberculosis. It is noteworthy that none of the farmers in Derbyshire or in Staffordshire sent tuberculous milk to the city In Dr Niven s report for 1913 particulars were given of the successful manner in which the work of keeping a herd of cows free from tuberculosis is being carried on The milk produced by this herd is still supplied to the large fever hospital at Monsall and to the sanatorium at Baguley

Poverty in relation to phthisis—A most instructive table is inserted giving a classification of the cases whose family income fell short of a standard rate according to the ascertained "shortage ' and showing the institutional assistance obtained for these patients The standard was based on that given by Mr B Rowntree in his book on poverty The table indicates under several headings the numbers living and the numbers dead at the end of 1915 the numbers admitted to the several hospitals and the number receiving institutional assistance It would appear from this table that in 1915 phthisis was more fatal to the poorer classes of cases than in previous years

Report of the Tuberculosis Officer

A valuable report by Dr D P Sutherland is appended to that of the medical officer of health It contains minute details of the manifold operations of his department in the course of the year We can only briefly refer to the analysis of cases in which the results of institutional and dispensary treatment are shown In the "residential

that the father the daughter and Mr Harbord concealed the fact from the plaintiff in consequence of which the rooms were let. After a great deal of evidence had been given the jury returned answers in the plaintiff's favour to all the questions put to them finding as facts that Mr Miller when he took the rooms was liable to infect persons and furniture with leprosy, and that he and his daughter knew it, that the disease was communicable by infection or contagion in England, that Miss Miller and Mr Harbord fraudulently misrepresented Mr Miller as fit to occupy the rooms, that they concealed from the plaintiff that Mr Miller was suffering from a disease which made him unfit and dangerous to occupy the rooms, that Mr Harbord acting as agent for the other two, stated that Mr Miller was not suffering from any contagious or infectious disease and that this was untrue as he and Miss Miller knew, that all three conspired to conceal the state of Mr Miller from the plaintiff and made false statements with that object. Damages to the extent of £250 were awarded. Counsel for Mr Harbord asked for judgment for his client *non obstante veredicto* on the ground that there was no obligation upon him to disclose his patient's condition to the plaintiff and no evidence that he did not believe that in this country leprosy was neither infectious nor contagious. After further argument to the effect that there was no evidence to support the jury's findings, Mr Justice Darling gave judgment for the defendants.

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[3] See table on p 41 of Registrar-General s return for the fourth quarter of 1915

[4] Published in 1915 by the Cambridge University Press Pp 263 Price 10s 6d

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Three sane and useful suggestions have been made by Mr S Ingleby Oddie in a letter to the *Times* for economising money and men's time in connexion with inquests. He recommends that the coroner should be enabled by an Act of Parliament (1) to hold inquests without a jury, or (2) to hold them with a jury of seven or (3) to order post-mortem examinations before deciding that an inquest is to be held. Of these it will probably be agreed by many that the adoption of numbers (1) and (3) not alternatively but simultaneously would be a useful innovation, and if such adoption were to be for the period of the war only would constitute an experiment which need not be continued if it should prove unsuccessful. The third suggestion deals with a recommendation often made by coroners which found strong support at the hands of the Departmental Committee on Coroners Law in 1910. The first should be favourably considered by those who remember that many coroners are, and all might be medical men with sufficient legal training for the performance of a coroner's duties so far as they entail knowledge of law. It may be pointed out that the economy of money time and man power effected would be on a more important scale than that involved in the recent abolition of reports of certifying surgeons on accidents, which had a similar object in view. Also it would not involve injustice to anyone whose functions would be dispensed with or any loss of protection to the persons on whose behalf they are now exercised.

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[1] The Lancet, 1916 ii, 837

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The loss of life from phthisis in 1915 was in excess of the average It was 1 76 per 1000 living of both sexes at all ages, and was above the mean rate in the preceding ten years by 0 09 per 1000 It was also ab ve the rate in the County of London by 0 16 per 1000 When the total deaths in a single year are distributed over several age groups in both sexes the *rate of mortality* for each separate group cannot usefully be compared with corresponding rates for previous years Nevertheless the *number of deaths* at each age may properly be compared, and thus an approximate idea of the course of events may be presented By this means we learn that *among males* the phthisis deaths were more numerous in 1915 than in any of the preceding ten years (This statement relates exclusively to the civil population, which includes Manchester soldiers discharged on account of phthisis) The most marked increase occurs at ages 15–19, 20–24, and 35–74 but not at ages 25–34, nor at ages under 15 *Among females* also there is a corresponding excess in the deaths, the increase being nearly as great as among males The greatest increase occurs at ages 25–34 It is possible that the additional stress of work now thrown on both sexes, and the inordinate demand for workers in the prime of life may account for the great addition to the death toll When the deaths from bronchitis are examined similarly, they present parallel rises to those from phthisis both among males and females Pneumonia shows no such increase, on the contrary among males the deaths thus returned in 1915 were fewer than in any of the preceding ten years Among females they were fewer than in any of the ten except 1906

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Report of the Tuberculosis Officer

A valuable report by Dr D P Sutherland is appended to that of the medical officer of health It contains minute details of the manifold operations of his department in the course of the year We can only briefly refer to the analysis of cases in which the results of institutional and dispensary treatment are shown In the "residential

department" 955 cases were treated in the several institutions, of which 505 were discharged "improved," 92 "without improvement," and 76 died. At the end of the year 221 cases remained under treatment. In the dispensary department 502 cases were treated, 212 of which were discharged as improved and 93 as without improvement, whilst 11 died. At the end of the year 132 patients still remained under treatment. Dr. Sutherland concludes his report with the encouraging statement that during the year 152 insured notified cases were found to have so far recovered that no evidence of active tuberculosis could be demonstrated; these are therefore to be regarded as arrested cases. They will, however, still remain under observation, and their health and working capacity will be reported upon periodically.

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[3] See table on p 41 of Registrar-General s return for the fourth quarter of 1915

[4] Published in 1915 by the Cambridge University Press Pp 263 Price 10s 6d.

IRELAND

(FROM OUR OWN CORRESPONDENTS.)

Annual Report of the Local Government Board for Ireland.

THE annual report of the Local Government Board for the year ending March 31st, 1916, is a slim pamphlet of some 60 pages instead of the portly volume to which we have been accustomed. This economy of paper and printing has been effected by the omission of the multitudinous tables and returns which used to appear as appendices to the report proper. The tables, though not published, have been prepared as usual and are available for reference. The figures relative to poor relief show a rising improvement. The numbers in workhouses, including sick, aged, and infirm, lunatics, idiots, and imbeciles, have decreased markedly, while the numbers in the extern institutions, and more especially those receiving outdoor relief, have diminished both individually and in the aggregate. In the workhouses the deaths have decreased by 581 on the number of the previous year, and the total number of deaths from tuberculosis have decreased by 167, thus keeping up the record of diminution which has existed without a break since 1912. The deaths of infants show a decrease of 272. A graceful tribute is paid in the report to the large number of medical officers who have volunteered for service with the forces of the Crown, while the difficulty of finding adequate assistance in caring and attending on the sick poor is also commented on. The notification of tuberculosis is being gradually extended, and some local bodies have passed resolutions in favour of the general introduction of the system. The report announces with regret that "notification is not infrequently delayed until a late stage in the disease," and asks that care should be taken in all cases to notify before the infection has reached an advanced stage. Unfortunately the Local Government Board ignores that under the conditions prescribed by the Board itself for the notification of tuberculosis it is only rarely that it is legal to notify the disease in the early stages. A medical man notifying the disease except under the prescribed conditions would leave himself open to an action for damages. In speaking of its care of the Belgian refugees thanks are given to the medical men and the hospitals of Dublin for the free advice and treatment rendered during the year.

Doctors of Military Age in Ireland.

The legal adviser of the Irish Local Government Board, Dr. Vanston, K.C., has given his opinion that the Board had an absolute discretion under Section 8 of the Act 14 and 15 Vict., cap. 68, to refuse their approval as they thought proper for any reason or without giving any reason to the appointment of a medical officer of a dispensary district made pursuant to statute by a board of guardians. Further, Dr. Vanston states that the Letterkenny board of guardians have no power to remove Dr. Walker from the office of temporary medical officer by passing the resolution of Sept. 8th, 1916, which was *ultra vires* and of no legal effect. In the face of these facts, communicated by the Local Government Board, the Letterkenny board of guardians, by a motion passed by a majority at their last weekly meeting, have decided to instruct their solicitor to take the necessary proceedings to compel the Local Government Board to sanction Dr. J. P. McGinley's appointment.[1]

Infectious Diseases in Ireland.

The following table in regard to infectious diseases in Ireland appeared in one of the Belfast papers of Dec. 28th, 1916. These are notifications:—

Dublin. Week ending—	Scarlet fever.	Diphtheria.	Enteric fever.	Erysipelas.	Total notifications.	*Belfast.* Week ending—	Scarlet fever.	Diphtheria.	Enteric fever.	Erysipelas.	Total notifications.
Nov. 18th	8	3	8	1	25	Nov. 18th	22	4	9	7	43
Nov. 25th	5	1	6	3	21	Nov. 25th	10	5	6	4	25
Dec. 2nd	7	3	2	0	20	Dec. 2nd	15	4	4	3	26
Dec. 16th	3	3	2	3	15	Dec. 16th	14	3	5	5	26
Total	23	10	18	7	81	Total ...	61	16	24	19	122

The disease "tuberculous phthisis" is now omitted. The anomalous figures under this heading were made the subject of comment in THE LANCET when it was pointed out that while only a few cases of phthisis were as a rule notified in Belfast, quite a number of notifications appeared in the Dublin list. The explanation, if such it can be called, is said to be the difficulty of notification in Ireland to which allusion has been made. The disappearance of the figures from the official table does not lessen the difficulty.

Jan. 6th.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be temporary Surgeons: A. Orr Ewing and R. Cripps.

Surg. J. R. Haldane is placed on the Retired List.

ARMY MEDICAL SERVICES

TERRITORIAL FORCE.

Capt. A. N. S. Carmichael, from attached to Units other than Medical Units, to be Deputy Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS

Lieut.-Col. I. Brodribb is restored to the establishment.

To be temporary Lieutenant-Colonels: Col. V. Matthews, late R.A.M.C. (T.F.), whilst specially employed; and H. M. Rigby (Capt. R.A.M.C., T.F.).

W. I. Home, Fleet Surgeon, R.N. (ret.), to be temporary Major.

To be temporary Honorary Majors: R. Armstrong-Jones and L. W. White.

To be temporary Captains: Temp. Lieut. F. W. H. Hutchinson, C. G. Whorlow, R. Williams, and C. H. Treadgold.

To be Lieutenant: R. Mountain.

To be temporary Lieutenants: J. K. Watson, C. D. H. Corbett, A. B. Goldie, H. H. Halifax, S. G. J. Dowling, A. C. S. Waters, E. B. White, F. C. Sprawson, F. Simpson, W. F. Gibb, C. M. Atkinson, A. G. Macdonald, A. B. McMaster, F. Challans, C. L. Tangye, P. J. O'Sullivan, J. A. Leighton, M. J. A. Wallis, R. O. Whyte, L. B. C. Trotter, I. G. Cobb, C. K. Smith, J. H. Mayston, H. Freeth, A. Leitch, J. Young, M. H. Raper, T. H. Macfie, B. A. Slocombe, M. Henry, O. L. Williams, and H. O. Peel.

Temporary Captains relinquishing their commissions: J. Burfield, R. J. Jones, and T. P. Weakliam (on account of ill health).

Lieutenants relinquishing their commissions: F. J. R. Forster, J. D. Shiels, W. K. O'Gorman, and M. F. Hession.

TERRITORIAL FORCE.

Capt. B. Robertshaw, from a Field Ambulance, to be Captain.

Capt. H. M. Rigby, Capt. J. O. Macnamara, and Capt. A. D. Reid are seconded whilst holding temporary commissions in the R.A.M.C.

Capt. J. M. Hunt to be temporary Major.

Capt. H. G. I. Dawson to be Major.

Lieutenants to be Captains: F. F. T. Hare, S. Child, and O. P. Sells.

Capt. (temp. Major) J. F. W. Mac Fall relinquishes his temporary rank on ceasing to command a Field Ambulance.

Capt. (temp. Major) J. Young to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

Lieut.-Col. F. J. Knowles, from Territorial Force Reserve, to be Lieutenant-Colonel without pay or allowances.

Capt. F. B. Smith, from a Field Ambulance, to be Captain.

Lieut. J. C. Newman to be Captain.

Captains relinquishing their commissions: E. P. Dawes, W. H. Calvert, and B. S. Wills.

TERRITORIAL FORCE RESERVE.

Capt. W. N. W. West Watson, from a casualty clearing station, to be Captain.

SPECIAL RESERVE OF OFFICERS.

Lieut. (on probation) R. R. Scott is confirmed in his rank.

INDIAN MEDICAL SERVICE

Temporary Lieutenants to be temporary Captains: Kamberanda Kalapa Mandara and Johangir Kaikhusro Nariman.

The retirement of Capt. Jogesh Chandra Dey has been confirmed by the King.

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[1] See THE LANCET, 1916, ii., 497.

Col W W Clemesha, Sanitary Commissioner with the Government of India, is at present working temporarily as health officer of Delhi pending the arrival of a permanent incumbent

DEATHS IN THE SERVICES

Surgeon-General Sir Edmond Townsend, K C B C M G , A M S , on Jan 3rd at his residence, Clontymon Co Cork aged 71 after a long record of active service He entered the Army in 1867 and served in the Abyssinian campaign 1867–68 (medal) in the Malay Peninsula 1875–76 where he was severely wounded (medal with clasp) and in the Zulu war where he was present at the battle of Alundi in 1879 (mentioned in despatches) He also served in the Egyptian war of 1882, including Kassassin, Tel-el Kebir (medal with clasp and Khedive s Star) in the Burmese Expedition 1885-86 (medal with clasp) and in the Ashanti Expedition (mentioned in despatches and star) He was with the forces in the North Western Frontier of India campaign 1897-98, Principal Medical Officer with the Mohmund Field Force and Principal Medical Officer with the 1st Division in the Tirah Expeditionary Force (mentioned in despatches, C B and medal with two clasps) In the South Africa n war of 1899–1902 he was Principal Medical Officer with the 1st Division and afterwards in the Western District (dangerously wounded. mentioned in despatches C M G Queen s medal with four clasps, and King's medal with two clasps) From 1902 till his retirement from the service in 1905 he was Principal Medical Officer at Netley

VITAL STATISTICS

HEALTH OF SCOTCH TOWNS

In the 16 largest Scotch towns 959 births and 872 deaths were registered during the week ended Saturday Dec. 30th 1916 The annual rate of mortality which had increased from 13 8 to 19 6 per 1000 in the four preceding weeks fell to 19·2 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death rate in these towns averaged 15 3 against 15·6 per 1000 in the large English towns. Among the several towns the death rate during the week ranged from 9 3 in Ayr 11 4 in Leith and 13 7 in Clydebank to 23·0 in Perth, 26 7 in Hamilton, and 26 9 in Dundee

The 872 deaths from all causes were 20 fewer than the number in the previous week and included 50 which were referred to the principal epidemic diseases against 37 and 46 in the two preceding weeks Of these 50 deaths, 13 resulted from infantile diarrhœal diseases 11 each from whooping cough and diphtheria, 10 from measles 3 from scarlet fever and 2 from enteric fever The annual death rate from these diseases was equal to 1 1 against 0·7 per 1000 in the large English towns. The deaths from infantile diarrhœa, which had been 14 10 and 9 in the three preceding weeks rose to 13 of which 9 occurred in Glasgow The deaths referred to diphtheria, which had been 6 3 and 6 in the three preceding weeks rose to 11 and included 4 in Glasgow and 2 each in Edinburgh and Dundee The fatal cases of whooping-cough which had been 3 7 and 12 in the three preceding weeks numbered 11 and comprised 4 in Glasgow 3 in Edinburgh and 2 in Leith The deaths attributed to measles, which had been 12 11 and 14 in the three preceding weeks fell to 10 of which 8 occurred in Dundee The 3 deaths from scarlet fever were slightly below the average in the earlier weeks of the quarter The 2 fatal cases of enteric fever occurred in Glasgow

The deaths referred to diseases of the respiratory system which had increased from 118 to 227 in the four preceding weeks further rose to 240 in the week under notice and were 85 above the number registered in the corresponding week of 1915 The deaths from violence numbered 27 against 34 and 33 in the two preceding weeks

HEALTH OF IRISH TOWNS

In the registration area of Dublin 130 births and 216 deaths were registered during the week ended Saturday Dec. 30th 1916. The annual rate of mortality which had increased from 17·7 to 25·6 per 1000 in the four preceding weeks further rose to 28 4 in the week under notice against 23·7 per 1000 in London

The 216 deaths from all causes included 24 of infants under 1 year and 73 of persons aged 65 years and upwards Five deaths were referred to infantile diarrhœa 4 to measles, 2 to whooping-cough and 1 to scarlet fever The causes of 19 deaths were uncertified and those of 9 others were the subject of coroners inquests while 79 or 37 per cent of the total deaths occurred in public institutions

During the same period 133 births and 159 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 21 3 per 1000 and included 14 of infants under 1 year and 52 of persons aged 65 years and upwards Two deaths were referred to infantile diarrhœa and 1 each to measles and diphtheria The causes of 5 deaths were uncertified 8 inquests were held and 39 of the total deaths occurred in public institutions

RUSSIAN MEDICAL SCHOLARSHIPS —The director of the Higher Institute of Medicine for Women at Petrograd has received an anonymous gift of £20 000 for the foundation of scholarships in the name of Count Vorontzoff, who died last year

CENTENARIANS —Mrs Elizabeth Symons, of Church Town Crowan died recently, aged 102 years and 10 months She is stated to have been the oldest person in Cornwall —Mr Samuel Stidwill of 6 Union street, Stonehouse Plymouth died on Dec 26th, 1916, aged 102 years —Mrs Harriet Godland died recently at an almshouse in Ilton, Dorset in her 104th year —Mrs Mary M Quade Omeath S Louth, died on Jan 4th at the remarkable age of 110 years She spoke English and Irish fluently and is said to have been the oldest woman in Ireland She resided all her life at Omeath and her age has—it is stated in the papers—been verified by church records

Correspondence.

' Audi alteram partem '

THE LIQUOR TRAFFIC AND THE FOOD QUESTION

To the Editor of THE LANCET

SIR,—In your leading article under this title you comment on the effect of the regulations of the Liquor Control Board in decreasing drunkenness and alcoholic disease as measured by the most characteristic manifestation of alcoholism, delirium tremens In the report of the Liquor Control Board, issued a few days ago, statistics are given which show a reduction in the number of female convictions for drunkenness of 43 8 per cent in England and 37 7 per cent in Scotland, and the Board regards these figures as effectively disproving the common assertion that, while drunkenness among men may have diminished it has increased among women My experience as physician in charge of the alcoholic wards in the Royal Infirmary, Edinburgh leads me to believe that there is an important fallacy in the data founded on , and it is in the public interest at the present time that attention should be drawn to it

During the past year there has been a very unusual strain on the wards in question and more especially for female patients The number of patients suffering from acute alcoholism—nearly all brought in by the police—who were sufficiently ill to necessitate their being treated as in patients was double the average of previous years The accompanying table shows the record for admission of men and women, and also the number of women arrested for drunkenness during the same period —

	Admissions to wards		Arrests for drunkenness
	Males	Females	Females
1913	198	52	1719
1914	185	51	1961
1915	169	53	1721
1916	151	103	1222

This increase in alcoholic cases is confirmed in the experience of the out-patient department of the hospital where less serious cases are treated for injuries received under the influence of liquor , statistics on this point are not, however, available, as the patients are classified according to the surgical conditions

We have therefore, an anomalous position, the experience of the hospital pointing conclusively to a marked increase of alcoholism among women , the statistics of the police under the headings of "Convictions for Drunkenness" and "Arrest for Drunkenness" pointing in the opposite direction

If the experience in Edinburgh can be taken as an index of conditions obtaining elsewhere, it seems clear that the Liquor Control Board is hardly justified in the conclusion it has drawn from the data supplied by the police reports I am aware that in former reports the Liquor Control Board has given statistics in regard to admissions for delirium tremens mostly, I think in English hospitals In this connexion it is important to keep in mind that in Scotland at any rate only a proportion, and a small one, of cases of acute alcoholism come into the category of delirium tremens

I am, Sir, yours faithfully,

Edinburgh, Jan. 8th 1917 CHALMERS WATSON, M D Edin

⁂ The curious discrepancy to which Dr Chalmers Watson calls attention is explained by the Prison Commissioners, to whose report we allude in another column Fewer women have been convicted of drunkenness, but the average number of convictions per individual has risen to such an extent as actually to increase the total number of convictions —ED L

To the Editor of THE LANCET

SIR —I have read the leading article on the liquor traffic and the food question, in which you comment adversely on total prohibition In the first place you say its enforcement would not be easy Why not? If the conscription of our sons has been attained, why not the conscription of our luxuries? It is the easiest and only way of solving the liquor question; all else is mere tinkering with the evil. Secondly, you put up a problematical case of evil resulting from the sudden cessation of alcohol, especially in elderly men who have been accustomed to it, and dwell on the possibility of restricted output on this account. This theoretical diminution, which I dispute, would be a mere drop in the bucket compared to the actual diminution which is at present going on in munition works from over-indulgence in alcohol by workers who carry it in and had opportunities to consume it at their work. Prohibition would undoubtedly vastly increase the output of war munitions, at least in Glasgow and Clyde district. Your third argument against prohibition is the use of other substances—methylated spirit, varnish, lacquer, and the poisonous effects on those who drink them. Why should we distress ourselves about these degenerates who will not deny their appetites? Is it for the protection and preservation of this portion of our race that we are sending our sons into battle?

Your alternative to prohibition of imposing restrictions in the hours of sale and quality of liquor as advocated by the Liquor Control Board has been a complete failure in Scotland. In to-day's *Glasgow Herald* an Edinburgh doctor gives statistics showing that in the Royal Infirmary there the number of acute alcoholic cases admitted to the female ward was twice as great as in 1913-14, although the convictions for drunkenness in the police courts had fallen by 500. A publican patient of mine tells me that he is quite satisfied with the restricted hours of sale, as he is selling a half more liquor than before it with less labour and expense. The long queues of women seen in Glasgow last week waiting to get bottles filled before the New Year closing day show the utter futility of these restrictions, and the after results are seen in our own Royal Infirmary, where probably one half of the surgical cases are the direct result of alcoholic indulgence. When you know of women admitted there this week with their faces trampled on by drunken husbands, and another jumping out a second storey window to escape from the violence of a drunken madman, you can only conclude that the total prohibition of alcohol is the only efficient way.

If a new disease were to make its appearance in the land bringing in its train one tithe of the wastage and suffering to innocent people that alcohol does, it would not be tolerated for a moment. State ownership would not cure the drinking habits of Scotland—they don't care who owns the public house; their object is to get enough to make them feel the effects of the alcohol. Till we as a nation get a Government that will help us to purge ourselves from our national sins, we cannot hope, nor do we deserve, to win the war.

I am, Sir, yours faithfully,
JAMES DUNLOP, M.B., C.M. Glasg.

Glasgow, Jan. 6th, 1917.

*** No one controverts much of what Dr. Dunlop says, on which we did not comment adversely. It is common knowledge. The enforcement of prohibition is difficult because a vested interest, subject to good conduct, has been recently conferred upon owners of licensed properties. The actual circumstances have to be looked at, lest in the search for what may later be the best we lose the present good.—ED. L.

AGGLUTINATION REACTIONS IN TYPHOID AND PARATYPHOID FEVERS

To the Editor of THE LANCET.

SIR,—It would appear from recent publications that Dreyer, Ainley Walker, and Gibson are of opinion that they were the first to realise the fact that repeated agglutination tests are necessary before arriving at a definite diagnosis in cases of the enteric group in inoculated men.

In a paper published by them in THE LANCET, 1915, i., 324, they made the following statement when dealing with this subject:—

> It is probable that the absence of accurate diagnosis in the past explains the fact that statistical results arrived at in our Army have not always been so convincing as would otherwise have been the case.

The above remark is quite untrue of later years and an injustice to officers of the Royal Army Medical Corps.

I feel that it is only right to point out that repeated observations by the macroscopic method of the serum agglutinin content in cases of suspected typhoid and paratyphoid fevers have been taught at the Royal Army Medical College and carried out by Army bacteriologists since the re-introduction of typhoid inoculation in the Army in 1905.

The necessity for using Dreyer's technique to arrive at reliable results, as suggested in a paper by Ainley Walker in THE LANCET of Nov. 25th, 1916, is not apparent, and equally reliable results can be and have been obtained when using a living suspension of bacilli, provided the suspension is standardised.

The following extracts will show that repeated observations were found to be necessary in past years, and it will be noted that these extracts are from reports and papers published some time before the appearance of papers by Dreyer, Ainley Walker, and Gibson, in fact before they had probably had very many opportunities of noting the serum reactions in inoculated individuals suffering from fevers of the enteric group, especially in the case of paratyphoid A fever, which rarely found its way west of Suez before this war.

The first is from an abstract of report on the enteric fever depot at Naini Tal, taken from the annual reports of divisional sanitary officers in India for 1908, published in 1909:—

> Some of these errors in diagnosis are due to the fact that the men had been inoculated and therefore their blood gave a positive Widal reaction, and they were diagnosed enteric fever on the strength of this alone. In all cases of fever in inoculated men the blood should be taken near the beginning and towards the end of the fever. If the two results are the same the case is probably not enteric. If there is a marked rise in the agglutination titre the case is certainly one of enteric fever. Every case of true enteric fever should give a complete reaction in a dilution of 1:100 at some period of the disease. In the case sheets of many of the men sent here it is noted "Widal reaction 1:40." Now nearly all inoculated men will give a positive reaction in this dilution for months and in some cases for years after inoculation.

Again, in the 1910 report from the same depot we find the following:—

> In paratyphoid fever the Widal reaction is invariably raised for the *B. typhosus*, especially during the first week of fever, and may be just as high for this bacillus as that shown during an attack of ordinary enteric fever. The reaction for para A is as a rule lower and may only be present in such dilutions as 1:20 and 1:40, and possibly only a trace in the latter; it is also as a rule transient and may only be found for a few days in the later stages of the disease or early days of convalescence, and as a rule disappears in a few weeks, although in some cases we have found it a year after the fever. The group agglutinins for typhoid also disappear rapidly in contrast to the specific agglutinins after an attack of true typhoid fever, which remain raised for months and years in some cases. Thus we have the apparent anomaly of a man passing through a fairly severe attack of enteric fever (clinically) and giving a few weeks later an entirely negative reaction. This has happened here in several cases from whose blood the *B. para A* had been isolated and whose agglutination titre had (during the fever) been high for both typhoid and para A. In some cases also the paratyphoid reaction may entirely disappear, leaving a raised titre for *B. typhosus*, and again very rarely the titre for paratyphoid may remain raised without any agglutinins for *B. typhosus*.

An article published in the *Journal of the Royal Army Medical Corps* also points to the fact that army bacteriologists were quite alive to the importance of repeated Widal estimations in 1910. The paper referred to is "An Inquiry into a Small Epidemic of Paratyphoid Fever in a Camp in India," by Major H. W. Grattan, R.A.M.C., and Major D. Harvey, R.A.M.C.[1] In this epidemic all the men who contracted the fever were inoculated against *B. typhosus*, and it is interesting to note that the bacillus was recovered from the blood in every case but one. The charts of the agglutination curves were published and are here reproduced. (See Chart I.)

To take another example, Chart II. is from a paper published in the *Journal of the Royal Army Medical Corps*, 1911, xvii., showing agglutination curves in a case of

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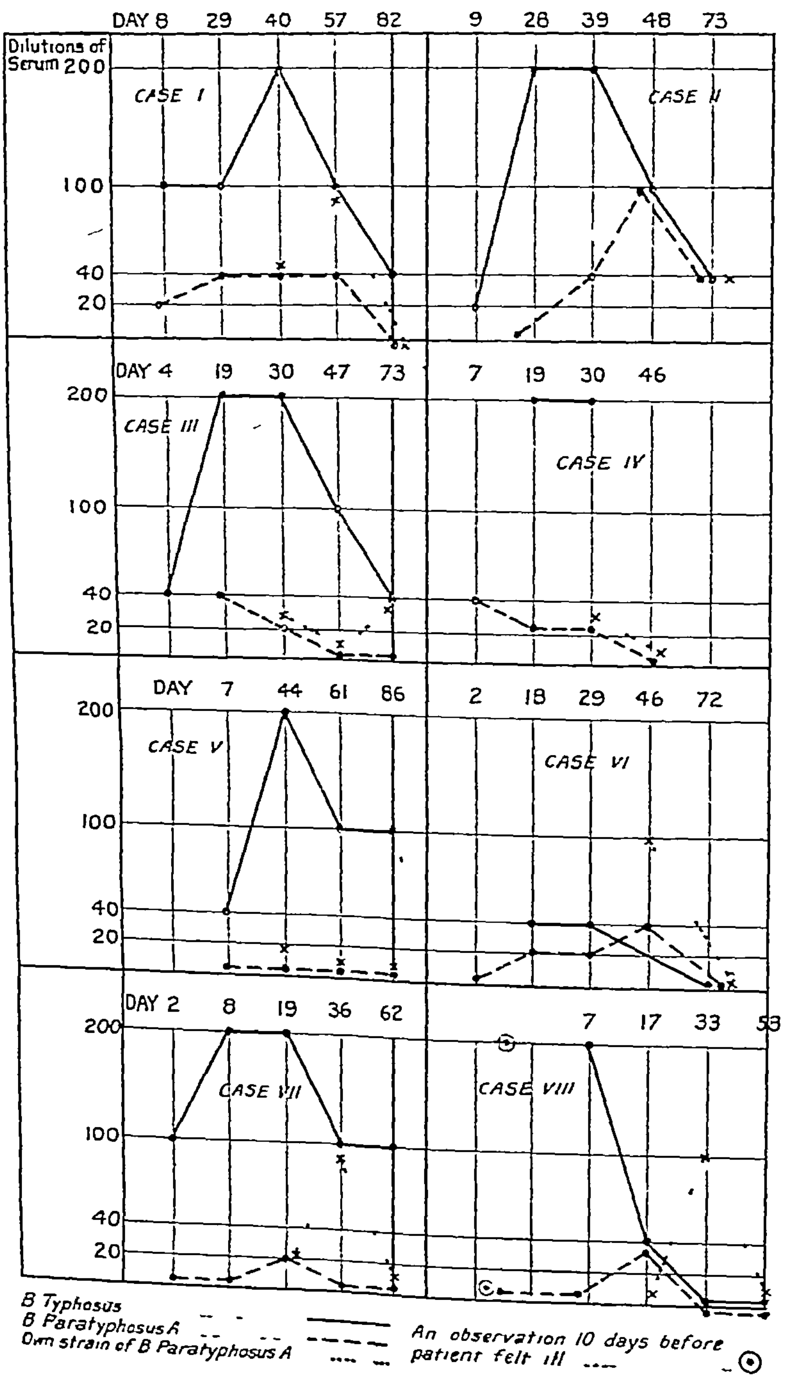
[1] Journal of the Royal Army Medical Corps, 1911, xvi., 9.

CHART I



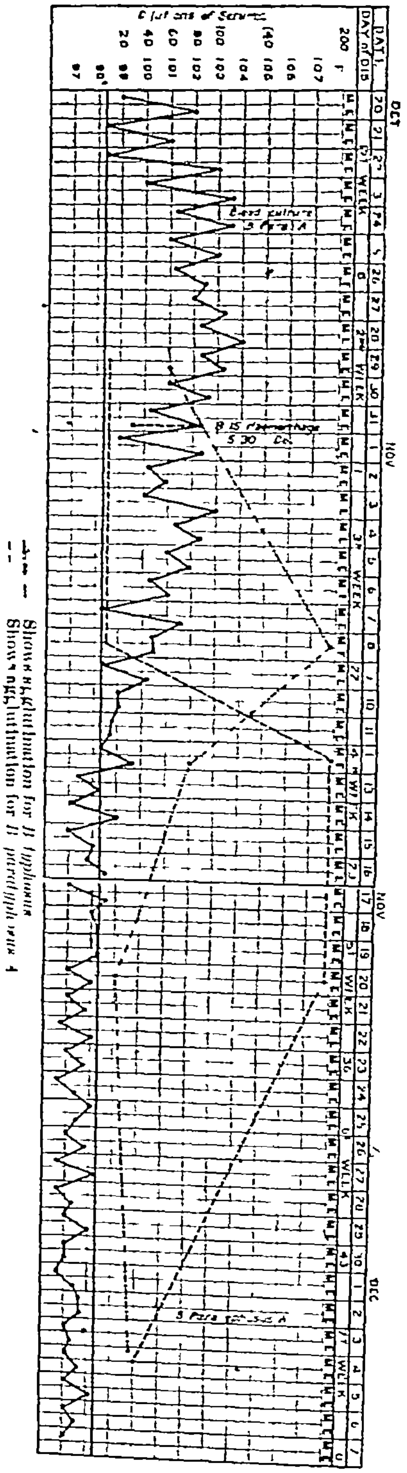


CHART II

paratyphoid A fever occurring in a man inoculated against *B typhosus*

This paper by Major H. W Grattan R A M C, and Captain J L Wood R A M C, gives an excellent account of the serum reactions of cases of paratyphoid A fever in inoculated men, and also mentions the frequency of the low titre of the serum for para. A. This point Professor Dreyer laid stress on at a meeting of The Royal Society of Medicine on Nov 9th 1915 His words at the meeting were —

> In every case bacteriologically proved to be a typhoid or paratyphoid B infection the agglutination method gave a positive diagnosis (i e 100 per cent of the cases), while in the case of paratyphoid A infection the agglutination test failed in only about 7 per cent of the cases Why are the results with paratyphoid A relatively so poor? The reason is that for a considerable time I did not know how low is the agglutination given by paratyphoid A in certain cases

This in the year 1915 and after he had been working with the two officers mentioned above, while all of the papers referred to in this communication were published before the end of 1911 The evidence brought forward will I think establish the fact that bacteriologists in the service were not quite so behindhand in the bacteriology of the enteric group of fevers as Drs Dreyer Ainley Walker and Gibson would lead us to believe

I am Sir, yours faithfully

H GRAEME GIBSON
Captain R A.M C

Royal Army Medical College Dec 30th 1916

THE NOMENCLATURE OF "INTERNAL SECRETION"

To the Editor of THE LANCET

SIR,—Dr Blair Bell, in his letter in your issue of Jan 6th, censures me for employing the term "endocrine organs" to denote organs of internal secretion I am however in no way responsible for this term as Dr Blair Bell seems to suppose although I think it convenient It has for some time been in general use, and appears to have come to stay Whether such a word as "endocrine" could be properly coined in Greek is beside the question What is certain is that it expresses what is wanted to be expressed—viz, the process of internal secretion by a simple word, which whatever it might be in Greek, is good enough English and has a familiar example in "endogen" to support it I am afraid many scientific terms used in medicine are not defensible on purely etymological grounds, yet quite well serve their purpose The term "endocrine" is at any rate hardly likely to be superseded by "endocritic" (which Dr Blair Bell has been in the habit of using) in its place, for apart from the fact that it is damned with very faint praise by the author of its being, who himself considers it "a poor word" it suggests to a physiologist the antithesis of "epicritic" which Head and Rivers have employed in a totally different connexion

As for the word "hormopoietic" which Dr Blair Bell now proposes we shall adopt in place of "endocritic" and regarding which he states that "the derivation is obvious and he thinks unassailable" a glance at a lexicon shows that this can only be derived from ὅρμος, a chain or cord so that the internally secreting organs thus become either "chain factories" or "rope walks" which as old Euclid used to say is absurd'

Regarding the term "hormone" I have given the history of this at length in my book on the "Endocrine Organs" published last year If Dr Blair Bell had looked at this or had consulted the original papers referred to in it he would have avoided more than one error Professor Starling who coined the word, and who as Dr Blair Bell says "is entitled to define his own term," has given a very precise definition of it[1]—viz "By the term 'hormone' I understand *any substance* normally produced by the body and carried by the blood stream to distant parts which it affects for the good of the organism as a whole He proceeds to give as examples of hormones, secretin, adrenalin *and carbonic acid*"[2] I myself propose to use the word "hormone" in the wide sense employed by its inventor, although Dr Blair Bell, following most authors, appears to wish to limit Professor Starling's definition to certain substances produced in definite organs

As long ago as 1894 it was shown by the late Dr George Oliver and myself that a specific organic substance is formed within the medulla of the suprarenal capsules which, when introduced into the blood, operates upon certain structures in the body in the same manner as drugs which are introduced from the outside, and as a matter of fact, this very substance which has been isolated, is now included in the Pharmacopœia amongst other drugs Since that time several other specific organic substances of like nature have been discovered although no other has as yet been chemically isolated Seeking for a convenient term to express such specific organic substances, whatever their action might be and realising my own classical shortcomings, I consulted with my friend and colleague, the late Professor W R Hardie, than whom, I suppose, our generation has seen no more accomplished classical scholar It was he who suggested the term "autacoid" (not autocoid, as Dr Blair Bell is made to put it, owing, I trust, to a printer's error), derived from ἄκος a remedy (whence also the term *panacea*, a universal remedy), and since this exactly expresses what is required—viz, a drug like substance formed by the body itself—I adopted the term defining an autacoid as a "specific organic substance formed by the cells of one organ and passed from them into the circulating fluid to produce effects upon other organs similar to those produced by drugs" But like other drugs autacoids either excite action or prevent action and for clarity's sake it is not only convenient but necessary to have two words expressive of these opposite effects To express excitation I adopted Professor Starling's term "hormone," which was already in general use, to express prevention the term "chalone" from χαλάω to make slack Thus the autacoids as well as other drugs, could be classed either as *hormonic* or *chalonic* according as they excite activity or prevent it To talk of provoking prevention, as Dr Blair Bell proposes to do, is a contradiction in terms

I may I hope be permitted to add without infringing the bounds set by modesty that I have at least as good a right as Dr Blair Bell to suggest an appropriate nomenclature for what is after all to some extent my own progeny

I am Sir yours faithfully,

University of Edinburgh Jan 9th 1917 F A. SCHAFER.

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[1] Proc Roy Soc Med 1914

[2] The italics are mine

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS

To the Editor of THE LANCET

SIR —The remarks of Professor David Drummond in THE LANCET of Nov 4th last regarding the influence of pressure upon the chest wall in altering the tone of cardiac murmurs suggest a comment upon the nature of such murmurs

A systolic apical murmur in the days when I was a medical student was looked upon as an indication of grave cardiac trouble We examined the heart carefully in cases of rheumatic fever and the appearance of a murmur was virtually considered to justify condemnation of the patient, so far as health was concerned for life Yet the question arose how if mitral regurgitation is occasioned by a deformity of the mitral valve which must take weeks or months to develop, can regurgitation be so quickly produced that a murmur may appear almost as soon as pain is complained of in the joints? Again it was soon noticed that not only a mitral systolic murmur but also a *pulmonary systolic murmur* was often present Then a paper by Dr Arthur Foxwell appeared attributing a pulmonary systolic murmur to dilatation of the right side of the heart Although Dr Foxwell's explanation may not have been correct in every detail it seemed to be reasonable and probably his main contention true—namely, that the murmur is associated with dilatation of the right ventricle chiefly in the neighbourhood of the conus arteriosus Accepting Dr Foxwell's explanation to be true, it was natural to conclude that if the pulmonary systolic murmur be due to dilatation of the right side of the heart, a mitral systolic murmur may also be due to dilatation of the left side of the heart This view was strengthened by noticing how frequently a systolic apical murmur arising during rheumatism may disappear and I wrote a short article in THE LANCET[1] which called forth a letter from Dr D B Lees, saying that he was intending to publish observations which supported the view of dilatation of the heart occurring in acute rheumatism

At that time it seemed reasonable to suppose—especially after meeting with definite cases of disease in the cardiac muscle in the post-mortem room, both in rheumatism and chorea—that the mitral systolic murmur was often due to dilatation of the heart allowing of mitral regurgitation Yet it became evident when looking up cases two to three years after a murmur had first been noted, that a mitral systolic murmur which had developed a harsh character before the patient first passed from under observation generally persisted, whereas a murmur described as lower pitched more often than not disappeared This gives rise to the question, What is the difference in causation of a low pitched and of a high pitched murmur? Can a systolic apical murmur be produced without the presence of regurgitation through the mitral orifice? Is it possible that the murmur may arise in the cardiac wall?

Professor David Drummond has recently commented upon the effect of pressure on the chest-wall upon cardiac murmurs laying stress on the fact that many murmurs can be abolished by pressure In my experience it is the low pitched murmurs which are very materially affected but I do not think are often completely abolished by pressure The lower tones disappear but a residuum of higher tones of more blowing character may remain We may assume that the higher pitched tones possibly indicate some temporary leakage through the mitral valve But how are the lower tones which disappear produced? In one detail I misread the letter of Professor Drummond when I recently ventured to add a note on my experience regarding the effect of pressure upon the chest-wall on murmurs Professor Drummond appears to consider that the murmurs which disappear are due to vibrations of the chest-wall. It is difficult quite to gather his meaning The chest-wall being the medium which, through the stethoscope, conveys murmurs to our ears must vibrate in all cases, but neither with functional nor organic disease can murmurs, it seems to me, originate in the chest-wall. If we abolish a murmur by pressure upon the chest-wall we presumably arrest the onward progress of those vibrations which compose the murmur In those murmurs which we do not abolish the vibrations are of a different nature, probably smaller and more rapid and pressure fails materially to influence them Earlier I have suggested whether it may be possible that a systolic murmur may arise in movements of the heart-wall In this connexion it may be interesting to remark that so frequently are slight functional murmurs audible both over the pulmonary and mitral areas in very young children that it seems to me they may be regarded as physiological In other words, cardiac action alters to some extent as age advances and some time may elapse before the cardiac sounds we are familiar with in adults become the fixed sounds of the heart. If we allow the view that some low-toned functional murmurs are produced by vibrations arising in unusual behaviour of the cardiac systole then perhaps we may consider some cases in which functional murmurs are heard to be a return to the comparatively unstable condition of early childhood.

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[1] THE LANCET 1896, ii 170

Whatever view may be held with regard to the possibility of functional apical systolic murmurs arising in the wall of the heart, in cases where a diastolic sound is audible between the first and second sound we have definite evidence of some abnormal cardiac action. An additional shock to that of the impulse can often be felt by the hand, and when the heart is diseased and much hypertrophied the abnormal impulse may, in rare instances, give a tracing in which the wave it indicates, though more transitory, may equal the wave of the systole in height. We are, however speaking more particularly of hearts in which there is no disease In them, although it is not so easy to obtain a graphic record of abnormal cardiac action the same action is very commonly present It may persist for days or weeks or be present at one moment and absent at another The point, however, on which I wish to lay stress is that a diastolic sound occurring between the first and second sounds is associated with some abnormal cardiac action This action may be an exaggeration of a physiological action. The frequency of its presence in children supports such a view But the action, when present in a marked degree, is abnormal as far as the adult is concerned. The sound which appears in association with the abnormal action must also be regarded an abnormal but as a rule is of no serious import. Yet I have known it frequently to be mistaken by well qualified men for a presystolic murmur and the subject of it to be diagnosed as a sufferer from mitral stenosis The sound itself, however, need in no way be connected with valvular disease, and in most instances is merely an indication of some passing phase of cardiac action.

To sum up the foregoing remarks it may be said that so-called functional murmurs are, as a rule, lower in tone than those having an organic origin. They are more materially affected by pressure. Although in the case of apical murmurs some temporary leakage of the mitral valve may be present the question arises whether that portion of the murmur which can be readily abolished by pressure may not be due to vibrations associated with an abnormal cardiac systole In favour of this view is the fact that in association with a diastolic sound, occurring between the first and second sounds there is obviously an unusual action of the heart which in most instances, being transitory must be described as functional.

Since writing the above an observation I believe of Sir Wm. Broadbent has occurred to me which may be worthy of note at the present time when so many soldiers who have undergone severe physical exertion are under medical supervision Sir Wm Broadbent so far as I remember (I quote from memory) without referring to the theory of Dr Foxwell concerning the method of production of the pulmonary systolic murmur stated that he had met with cases in which healthy young men manifested pulmonary systolic murmur after prolonged physical exertion, such as mountain climbing It would be interesting if this observation should be confirmed It may be added also in connexion with the effect of pressure upon cardiac murmurs that I believe my attention was first drawn to the fact by a paper published by Dr Sydney Ringer and Dr A. G Phear many years ago Dr Moxon once said that the "art of originality is the art of forgetting" There may occasionally be experiences with which one becomes so familiar that one forgets whether they first impressed themselves upon one s mind in virtue of their own force or whether some other observer has drawn one's attention to them

I am, Sir, yours faithfully,

Jan. 8th 1917 **THEODORE FISHER**, M D Lond

STAPHYLOCOCCUS MENINGITIS

To the Editor of THE LANCET

SIR,—The diagnosis of the case described as staphylococcus meningitis by Dr H. Bourges in your issue of Jan 6th (p 26) would appear likely to be at least doubtful Contamination by *Staphylococcus albus* in my experience in lumbar puncture, however carefully the skin is prepared is fairly frequent, both in cases where the meningococcus is found and where it is not found. Gram positive cocci in any turpentine abscess of some duration would not be uncommon. Authorities agree that many cases of cerebro-spinal fever occur where the causative organism which is very elusive is not found. The description of the case and the fact that the patient recovered makes it likely to be one of cerebro-spinal fever rather than one of staphylococcus meningitis

In reference to this contamination you published a few issues back the description of a puncture needle specially designed to obviate its contamination by the operator's fingers I find a simpler method is to flame the head of the needle after puncture and before withdrawing the stilette to collect the fluid.—I am, Sir, yours faithfully,

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Temporary Captain, R.A.M.C
Military Laboratory for Cerebro-spinal Fever Ipswich
Jan. 7th 1917

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SIR,—In a recent investigation into the anti coagulating action of acid aniline dyes on proteins, Holland[1] found that blood serum could be heated to high temperatures with these dyes without undergoing coagulation He stated that blood serum to which was added half its volume of a 2 per cent solution of Congo red, set to a clear jelly after sterilisation at 120° C and could be used as a culture medium for bacteria. This fact appeared to the writer who had been doing much culture work with the meningococcus, to offer an easily prepared medium upon which that organism could be grown readily, and which could be used for plate cultures. Accordingly, sloped tubes of the Congo red serum were prepared in the inspissator, and it was found that the medium was transparent, at any rate in the upper portion of the slope, although in the lower portion the colour was somewhat too dense to be accurately described as absolutely transparent. The top thin part of the slope was inclined to become hard. Stroke cultures of meningococcus on the new medium grew well and discrete red colonies were plainly visible in the upper part of the stroke when examined with a lens through the medium. The viability of the organism in these cultures was quite good, subcultures being obtained after two to three weeks The cultures also yielded the characteristic sugar reactions of the organism

Plates of the new medium were prepared by pouring the liquid mixture into the plate and sterilising at 120° C for 20 minutes There being a considerable amount of expressed water it was found inadvisable to use the inverted position for drying off the plates The surface of the medium was somewhat soft but it was quite transparent and colonies could readily be examined under the microscope. An opportunity has not yet arisen for using these plates for obtaining

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[1] Comptes Rendus vol. clxii., p. 959

tones which disappear produced? In one detail I misread the letter of Professor Drummond when I recently ventured to add a note on my experience regarding the effect of pressure upon the chest-wall on murmurs Professor Drummond appears to consider that the murmurs which disappear are due to vibrations of the chest-wall It is difficult quite to gather his meaning The chest-wall being the medium which through the stethoscope, conveys murmurs to our ears must vibrate in all cases, but neither with functional nor organic disease can murmurs, it seems to me, originate in the chest-wall. If we abolish a murmur by pressure upon the chest-wall we presumably arrest the onward progress of those vibrations which compose the murmur In those murmurs which we do not abolish the vibrations are of a different nature, probably smaller and more rapid, and pressure fails materially to influence them Earlier I have suggested whether it may be possible that a systolic murmur may arise in movements of the heart-wall In this connexion it may be interesting to remark that so frequently are slight functional murmurs audible both over the pulmonary and mitral areas in very young children that it seems to me they may be regarded as physiological In other words, cardiac action alters to some extent as age advances and some time may elapse before the cardiac sounds we are familiar with in adults become the fixed sounds of the heart. If we allow the view that some low-toned functional murmurs are produced by vibrations arising in unusual behaviour of the cardiac systole then perhaps we may consider some cases in which functional murmurs are heard to be a return to the comparatively unstable condition of early childhood.

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INDIAN MEDICAL SERVICE

Manifold Col C C C B

THE EMPLOYMENT OF AMERICAN DOCTORS

Publicity has recently been given in the daily press to the statement that young American doctors have volunteered their services and will be freely substituted for British doctors in the hospitals of this country in order to set free the present medical officers of military age for active service abroad A recent statement in an American journal that the Director General of our Army Medical Service had asked for the supply of a hundred or more young American doctors has we believe not been contradicted and may therefore be taken as the policy of the Army Medical Department To them will be allotted posts in military hospitals in this country which they can fill without possessing either a commission or a qualification registrable here A corresponding number of British doctors of military age holding commissions will thus be set free. So far then as military occupation goes the accounts in the daily press have been based upon fact if misleading in detail As regards civilian practice, as far as we know the question of the employment of American doctors has not arisen in any practical form The legal obligations of the civilian practitioner both in hospital and private practice, prevent the employment here of those whose names do not appear on the British Medical Register So long as the present absence of reciprocity between the United States and this country in medical matters remains unrectified registration implies the obtaining in this country of a medical diploma recognised by the General Medical Council

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NEW RED CROSS HOSPITAL FOR GLOUCESTER—The Bishop of Gloucester's Palace at Gloucester has been fitted up as a Red Cross hospital It will accommodate 100 patients, contains an X ray apparatus and a complete electrical massage installation

April, 1915, in charge of a clearing station, came home three months later with severe shell shock, and was invalided out of the service in October, 1915 In spite of his poor health he then took over the practice at Earby of his brother, the late Surgeon P D Pickles who died of gas poisoning after going down with H M S *Russell* in the Mediterranean last year Unfortunately, his health did not improve and an attack of broncho pneumonia following influenza proved fatal

Captain C C Pickles s service to his country was undertaken with no thought of himself His transference from combatant to medical service was made at a time when doctors were urgently required for the Army, and the strain of his work contributed to the illness from which he never quite recovered His record and that of his family are a notable achievement Captain Pickles married in June of last year Dorothy B E Wilkinson, only daughter of Charles Wilkinson, of Boston Spa and Leeds

THE FIRST BRITISH RED CROSS UNIT IN ITALY

We have received from Dr G S Brock chief medical officer to the unit a report of the first year s hospital work drawn up for the Joint War Committee from which we take the following —

Villa Trento, the headquarters of the ambulance unit, is on the high road beyond the bridge over the river Natisone at Manzanol, and within a dozen miles of the fighting on the Isonzo front, on Monte Sabotino, at Oslavia, and on Monte Podgora The villa is a large building of seventeenth century design, belonging to the Conte di Trento, with a central portion of three storeys and wings of two storeys, flanked on either side by tall pine trees Behind the latter, on one hand, is a line of offices occupied by a detachment of Carabinieri, while on the other is a long building of which the upper storey, ordinarily used as a granary, now forms an important part of the hospital There is plenty of garden space where convalescents can take air and exercise enjoyably

Dr Brock tells us that at the time of the unit's arrival (Sept 5th 1915) the villa was occupied as an Italian hospital and the first ambulance work consisted in transporting some 50 patients to the neighbouring Abbazia Hospital Much had then to be done both in improving the very bad sanitary conditions and in adapting the villa to its purpose This work, performed almost entirely by members of the unit, was speedily carried out On Sept 12th was received the first batch of 8 patients, and by the end of the month the number accommodated was 55 After dealing with defective sanitation the unit turned its attention to getting a satisfactory water supply Water from a deep well was found by Captain Franchini of the VI Army Corps, to be quite free from pathogenic organisms A second source from an open stream in spite of filtering was impure but no doubt often found its way into the unit s food and drink Fortunately another source became available from the Acquedotto Poiano by the kind help of Colonel Moreno of the "Genio ' of the Army Corps, to which the unit is attached This water is of excellent quality and practically unvarying quantity is moderately soft and under high pressure The effect of this new water supply on the health of the unit was immediate there being no longer cases of diarrhœa. The absence of heating arrangements did not lead to serious inconvenience during the summer, but on the approach of cold weather something had to be done The Genio provided stoves for all the wards and also for some of the rooms By means of these and a number of petroleum stoves the villa has been fairly well heated The villa is lighted by its own electric installation of gas engine accumulators The laundry arrangements were totally inadequate Application was made to General Cavicchia of the Direzione di Sanità of the 2nd Army, laying before him a scheme for the erection of a disinfecting room, washhouse ironing room, and drying room which he very kindly had carried out by the Genio, and also provided a steam disinfector and a complete set of apparatus consisting of two large galvanised iron boilers a soaking tank and a rinsing machine Regarding the disposal of refuse all combustible materials are burnt by two incinerators—one of brick built by the unit the other of iron supplied by the Direzione di Sanità Non combustible materials are buried in a neighbouring field

The original idea in the minds of the organisers of the ambulance unit, Dr Brock tells us, was to provide as an adjunct to it a small evacuation hospital of 25 beds with 25 stretchers for cases requiring to remain in the hospital for a few hours only The accommodation, however, has been gradually so greatly extended that 97 patients can now be provided with beds, and there is room in an emergency for more The unit's funds do not at present allow of filling more than about 65 of these, and this may be considered for the moment the normal number The ground floor of the villa was appropriated, as far as possible, for hospital purposes The outbreak of Asiatic cholera made it necessary to prepare an isolation ward A part of the granary was partitioned off into two rooms, one for suspected cases and the other for cases such as typhus or cholera After the great battle in the first week of November, 1915, a great rush of wounded came from the Gorizia section All the beds (54) in the villa were quickly filled and the remainder of the patients were put on mattresses or on straw in the granary in four long lines As many as 150 patients were at one time in the hospital The remaining part of the granary has since been partitioned off and divided into two, so as to form two large wards

An out-patient department has also become a necessity Many soldiers sent from the front into reserve are encamped in this neighbourhood often unaccompanied by a medical officer In case of illness they usually come for advice to this hospital The number of these soon necessitated an out-patient department A waiting room and consulting-room have been partitioned off in the granary, and this work is undertaken by an Italian colleague, Lieutenant De Lisi, who has been attached to the unit from the first and has rendered invaluable assistance

The pharmacy of the hospital is under the care of Lieutenant Balotta, another Italian officer detailed by the Direzione di Sanità to assist the unit A certain amount of the drugs used has come from England, but the greater part of the pharmacy supplies is obtained from the "Magazzino Avanzato' of Udine, These are used not only for the hospital, but also for the out-patients A certain equipment (hospital supplies other than drugs) was brought out from England and more followed later by sea But a great many things had to be obtained locally, as, for instance, the furniture of the operating room Fortunately a large number of bales containing such stores, collected by the Ladies' Committee in England and Scotland, were sent with members of the unit coming out in time for the great rush of wounded Since then the hospital has received many generous contributions of money and supplies from friends in Britain and from British residents in Italy Large consignments have been received from various war hospital supply depôts including those of Kensington Belgravia, Norwich, and Rome and a very large one has now arrived from the Scottish Red Cross

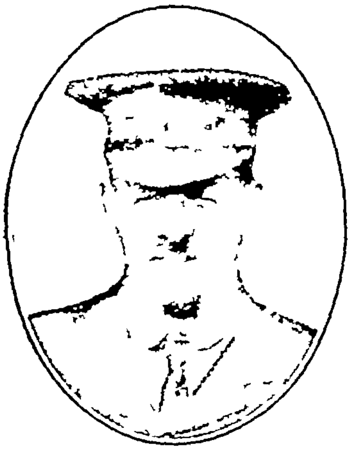
When the hospital was opened in September, 1915, the unit expected to act only as a clearing station Later, according to instructions received from Colonel Moreno in regard to the stay of wounded in the hospital, the unit was to work only as a field hospital It was soon realised, however, that when little fighting was in progress the work done might be that of a small base hospital, but when a rush of wounded is anticipated all the sick and wounded who can be safely transported are evacuated in order once more to take on the role of a field hospital

The medical staff consists of the chief medical officer, who is also its "direttore" and two surgeons The present chief medical officer has been with the unit since its work began The two surgeons, Dr W E Thompson, and Dr W A Propert joined later—in October 1915—when Dr W R Dakin and Professor Henry Tonks, F R C S, the well-known artist, who had come out with the unit were obliged to leave by other engagements Mr R Creasy, of Windlesham Surrey, took duty for a month at the beginning of 1916 in the absence of one of the surgeons Dr Propert rejoined some time ago As to nursing, the unit at first went on as best it could with the help of men belonging to the unit and of some Italian soldier orderlies Nineteen of the members seven of them medical students took duty as nurses and dressers Eventually the authorities consented to female nurses being employed The advent of female nurses made a vast difference for the better many of them speaking Italian Of our male nurses and dressers only five remain on the hospital side.

OBITUARY OF THE WAR

NORMAN ERNEST JASPER HARDING, M B, Ch B Edin,

MAJOR ROYAL ARMY MEDICAL CORPS



Major N E J Harding who died of cholera at Colaba Military Hospital on August 10th last while in command of a stationary hospital at Bombay, was 41 years of age He studied at Edinburgh and at University College, Liverpool graduating in medicine at Edinburgh University in 1900 and entering the Royal Army Medical Corps a year later after taking a diploma in Public Health He obtained his captaincy in 1906 and his majority in 1914 He was seriously wounded in the Boer War, and for his services at that time was decorated with the Queen's medal with two clasps and the King's medal. He went to France with No 12 General Hospital on the outbreak of war and served there for 15 months, before taking to India the unit which he was commanding at the time of his death Previously to the outbreak of war he had served in Burma and on the West Coast of Africa He contributed an article on the Value of Koch's Treatment of Malaria, to the *Journal of the Royal Army Medical Corps* and other articles of a historical and professional character

In 1908 Major Harding married Dorothy, oldest daughter of the late Ernest Wetton, of Maidstone, and of Kobe, Japan

ROGER FORREST HUGHES, B A M B, Ch.M Sydney,

CAPTAIN AUSTRALIAN ARMY MEDICAL CORPS

Captain R F Hughes who was killed on active service on Dec 11th last was 26 years of age and the elder son of Sir Thomas Hughes who was for many years Lord Mayor of Sydney He was educated at St Ignatius College Sydney, entering the Sydney University where he first graduated in arts, and obtained his medical qualifications at the end of 1915 He then filled the position of resident medical officer at St Vincent's Hospital until March, 1916, when he enlisted in the Australian Army Medical Corps After serving for six months at a base military hospital in Sydney he was detailed for service as regimental medical officer to an Australian battalion in France arriving there early in December Ten days later while dressing a wounded man in his advanced station he was severely wounded and died the same day Captain Hughes was well known in athletic circles in Sydney He represented his school at cricket and football and his university at hockey Just prior to leaving Australia he married Eileen, youngest daughter of M E Maher of Collaroy Station, Merriwa, N S W with whom and his parents much sympathy will be felt for his untimely death at the outset of a promising career

CHARLES KENNETH McKERROW, M A M B B C Camb,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain C K McKerrow, who died of wounds received the same day on Dec. 20th last, at the age of 33 was elder son of the late Dr George McKerrow, of Ayr He was educated at Cargilfield and Charterhouse Schools gaining from the latter the Science Scholarship of his year for Cambridge and later an open scholarship at Clare College He took a first class in science graduated M B and B C in 1908, obtaining in the same year the diploma of the Conjoint Board After holding resident posts at St. George's Hospital and being extern to the 1st Frauenklinik in Vienna he joined his father in practice in Ayr for some years On obtaining a commission in the R.A.M C in June 1915, he was appointed regimental medical officer to a battalion of Northumberland Fusiliers, going with them to France where he remained until his death

Captain McKerrow was not one sided in his development At school and later he had some reputation as a middle weight boxer and he also played Association football for his college His superior officer writes of him "A few days before his death Captain McKerrow read an excellent paper on Trench Fever before our Divisional Medical Society, giving proof of his careful clinical work even in the trenches I formed a very high opinion of him both as a gallant soldier and a skilful surgeon He was absolutely fearless in the performance of his duty

In January 1915 Captain McKerrow married Jean only daughter of the late James Craik, and leaves a widow and one son

CLIFFORD CRAWSHAW PICKLES, M R C S Eng D P H Leeds

LATE CAPTAIN ROYAL ARMY MEDICAL CORPS (T F)

Mr C C Pickles who died on Dec 22nd last, after being invalided out of the Royal Army Medical Corps was 30 years of age, and the third son of Dr J J Pickles, of Camp road Leeds, of whose six sons five were members of the medical profession and one a student before the war Educated at the Leeds Grammar School Clifford Pickles entered the School of Medicine at the University of Leeds obtaining in 1909 the Conjoint Board qualification, and two years later the Public Health diploma of his University After holding resident appointments at Leeds and acting as assistant in general practice at Harrogate and Ossett he was appointed medical inspector of school children under the North Riding Education Committee and was stationed at Malton, where he was also in charge of the local company of the 5th Yorkshire Territorials At the outbreak of hostilities he was medical officer at Gateforth Sanatorium near Selby, and on mobilisation served with the 5th Yorkshire Regiment at home for some months, after which he was transferred to the medical service as a captain He went out to France in

Obituary.

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Up to the end of March, 1916, the numbers of patients treated were as follows —

Consultations in out-patient department	1422
Total admitted to hospital up to March 31st	1022
discharged ,, ,,	957
In hospital on April 1st	55
Average number of days in hospital per patient	9·8
Total number of deaths	27
Deaths per cent of patients admitted	2·6
,, ,, among sick only	0·1
,, ,, wounded only	4·5

The death rate was thus very low considering the many severe cases. The only death among medical cases was in a case of double pneumonia. The 398 sick discharged were nearly all cured or convalescent. Among the few exceptions were eight cases of cholera removed to cholera hospitals on diagnosis, four terminating fatally. Cases of frozen feet with the skin apparently uninjured have been counted as medical, but those with the skin blistered or broken as surgical. The nature of the medical cases chiefly met with will be seen from the following table, relating to 459 sick admitted up to the end of March, 1916

Disease	Percentage to total sick	Months of prevalence
Frozen feet	14·0	December January and February
Gastro-enteritis (including gastritis and enteritis)	13·5	All months but especially December and March
Fevers of influenzal type trench fever	12·0	December and March
Rheumatism chronic and muscular	9·0	All months
Bronchitis	7·0	From November onwards
Jaundice	6·0	January February and March
Paratyphoid	3·8	From November onward
Pleurisy	2·9	From December onwards
Otitis media	2·0	
Conjunctivitis	2·0	February and March
Cholera	1·8	Nov 9th to Dec 7th
Pneumonia	1·6	December January and February

It is remarkable that no case of cholera occurred in members of the unit, many of whom were constantly coming in contact with cholera patients; this was no doubt the result of the precautions taken, including anti cholera vaccinations of nearly all the members shortly after arrival with vaccine supplied by the Lister Institute of London. It is also striking to find true typhoid absent, as well as the comparatively large number (17) of paratyphoid cases. In the Italian Army antityphoid vaccination has been practised, but not antiparatyphoid vaccination. A combined vaccine is, however, now being largely used containing 800 million typhoid and 500 million paratyphoid B bacilli per cubic centimetre, in three doses at intervals of a week the last two doses of 1 c c being double the first. The paratyphoid was on the whole of a benign type and unaccompanied by grave complications. A great difference of opinion prevails as to the causation of "piedi congelati" (frozen feet). Dr Brock is convinced that the puttee is the chief offender.

There have been a great many visitors, both Italian and English. The King of Italy has paid three visits, at the last one decorating the commandant, Mr G M Trevelyan, with the silver medal for valour. Another royal visitor on three occasions was the Duchess of Aosta.

A report follows on the surgical cases in the hospital by Mr W E Thompson, M B, Ch B Edin. The numbers of surgical cases he tells us, greatly varied. At the commencement wards had been prepared and an operating theatre reconstructed. Instruments in large variety, tables and cupboards of good sterilisable material were procured and a good supply of dressings was put ready to hand. It was soon found that more apparatus was needed especially a bacteriological laboratory and an X ray installation. Both of these have since been sent the microscope the gift of Miss Gray, of Rome. The other gift the X ray installation, is largely owing to the generosity of Dr Barbour, of Edinburgh, and Mr Saunders, of Croydon. A great variety of surgical cases has been dealt with from cuts and bruises to severe head chest and abdominal injuries. Up to March 31st 1916 there were 84 operations, 34 of these being major. Taking into account the severity of so many cases where the only object attainable was relief of suffering, the death rate of operation cases was just over 10 per cent and the total mortality of all surgical cases about 1 5 per cent. There were 21 amputations of the leg and arm—12 being of the leg. Four cases of traumatic empyema were operated on, in one a piece of shrapnel being literally picked off the back of the heart. Practically every surgical case required drainage in some form, and some for a length of time. For gas gangrene nothing was found better than peroxide of hydrogen and eusol, followed by 5 per cent saline. The best absorbent dressing for these cases was the sphagnum moss bags presented by Mr C W Cathcart, of Edinburgh, and others. These were a great saving in dressings as well as an ideal dressing.

Two supplementary reports bring the figures up to the end of June and August respectively, and deal with the second year of work. During the three months April to June the total patients admitted increased from 1022 to 1492—792 sick, 700 wounded. Unfortunately on June 7th the unit lost Dr Propert's services by his enforced return to England. For the month of August the admissions to hospital reached a high figure, especially in the early part during the great Italian offensive which resulted in the capture of Gorizia, when there was a daily average of 160 occupied beds. As may be easily imagined, the strain on organisation and personnel was very severe, since not only were the numbers sometimes double that for which the unit is normally equipped, but it had to play the rôle of a clearing hospital as well. Fortunately a great many wounds were light, many patients in a day or two being fit to return to their regiments. Great although the strain was, everything went on with wonderful smoothness and efficiency, calling forth praise both from the Italian military and sanitary authorities and from the Chief Commissioner of the British Red Cross for the Mediterranean, Sir Courtauld Thompson, who happened to be here during the most strenuous part of it.

THE PANEL COMMITTEE FOR THE COUNTY OF LONDON AND THE MOBILISATION OF THE MEDICAL PROFESSION

The following resolutions were passed by the Panel Committee of the County of London at their meeting on Tuesday last Jan 9th —

(a) That the Panel Committee are of opinion that, in respect to the proposal to mobilise the medical profession, it is essential in order to secure the efficient working of any scheme adopted that extended powers be conferred upon the Central Medical War Committee in connexion therewith and that the personnel of the Committee be strengthened by the addition of at least six practitioners actively engaged in panel practice one of whom should be a woman.

(b) That the Panel Committee are of opinion that, in so far as the recommendations of the Central Medical War Committee shall have reference to the services rendered by the medical profession to the civil population if accepted these should be carried into effect by a small executive committee appointed from the members of the Central Medical War Committee with lay members appointed by the Director of National Service.

(c) That the Panel Committee are of opinion that the difficulties of the Committees in this connexion would be greatly lessened and a considerably increased number of medical men set free for active service abroad without serious interference with the medical needs of the civilian population if much greater use were in future made of the part time services of civilian doctors for the treatment of sick and wounded soldiers whilst in hospitals and for other military duties in this country.

(d) That copies of the foregoing resolutions be forwarded to the Central Medical War Committee the Director of National Service, and to the other Government Departments concerned.

We comment on these resolutions elsewhere.

CONVALESCENT HOME IN *CALCUTTA*.—An offer has been made and accepted from Calcutta to entertain 100 men and 10 or more officers invalided from Mesopotamia. Mr Galstaun has given the use of his house in Circular road while Raja Kristo Das Law has lent No 23 Theatre road as a residential club for convalescent officers. The Calcutta nursing division of the St John Ambulance Brigade are fitting out these two fine residences for the purposes they are to serve. The estimated cost of the furnishing and upkeep for five months has been put at 1½ lakhs of rupees, and this amount is likely to be forthcoming.

METROPOLITAN ASYLUMS BOARD THREATENED SHORTAGE OF AMBULANCES.—The lack of motor and driver mechanics is reducing the ambulance service of the Asylums Board to a dangerous extent. The Ambulance Committee states that 37 per cent of the ambulances are awaiting repair, and that probably within a few months the ambulance service will be unable to remove fever patients from their homes. The committee urges on the Board the necessity for the return of mechanics who have been taken for Army or munitions service.

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ROYAL COLLEGE OF SURGEONS OF ENGLAND —The second series of lectures on the Anatomy of the Human Body will be delivered by Professor Arthur Keith, Conservator of the Museum, for first-aid and ambulance students, at 5 P M, in the theatre of the College in Lincoln's Inn Fields, on Mondays Wednesdays, and Fridays, commencing on Monday next Jan 15th Anatomical preparations and specimens, used for purposes of illustration, will be placed on exhibition in the theatre from 3 to 5 P M on each lecture day On the following day the same preparations will be placed in the hall of the Museum, where they may be studied between the hours of 10 A.M and 5 P M

At the Preliminary Science Examination for the Licence in Dental Surgery the following candidates were approved in the undermentioned subjects —

Chemistry and Physics —Reginald James Hooker Municipal Technical College Brighton Elisha Clemens Keet, South African College Phillip Heygate Knowles Reading School George Levy Guy's Hospital Peter John Morrison South African College and Guy's Hospital and George Edward Smith Liverpool University

Chemistry —Levi Austin Bevan University of North Wales Bangor and Gilbert James Burbery Rowe, Municipal College, Bournemouth

Physics —Gerald Fraser Smith Middlesex Hospital

ROYAL MEDICAL BENEVOLENT FUND —At a meeting of the committee held on Dec 12th, 1916, 30 cases were considered, and £317 15s granted to 28 of the applicants The following is a summary of the cases relieved —

Widow aged 44 of M B Lond who practised in London and died in August, 1916 Owing to the war it was impossible to sell the practice Applicant lives in own house which is to be sold and when her affairs are settled her income will only be about £120 a year Has two children aged 8 and 9 Wants help towards the education of her son who is a candidate for Epsom but not likely to be elected for over a year Voted £5 —L R C P Edin married who practised at Bervie N B Owing to ill health his earnings have only been about £70 per annum for some time and his wife aged 70 is now blind and a daughter who was a housekeeper has had to give up her post so as to be able to nurse her father and mother Voted £24 in two instalments —Daughter aged 69 of M R C S Eng who practised at Cambridge and died in 1887 Applicant was able to earn a living by taking in paying guests on the south-east coast until the war commenced but since has not been successful and has had to give up her house Only income £35 per annum Relieved once, £12. Voted £12 in 12 instalments —Daughter aged 70 of M R C S Eng who practised in London and died in 1875 Applicant was a governess in Russia when the war commenced and all her savings were in a Berlin bank For the last two years has earned a living by clerical work but her eyesight has now failed and has had to give it up Only income a pension of £30 from another charity Relieved twice £24 Voted £12 in 12 instalments —Daughter aged 50 of M R C S Eng who practised in India and London and died in 1873 Applicant left unprovided for and owing to ill health unable to earn a living Only income £22 per annum Relieved three times £20 Voted £10 in two instalments —Daughter aged 58 of M R C S Eng who practised at Hammersmith and died in 1908 Owing to ill health unable to work and only income occasional help from friends and from the Guild Relieved nine times £122 Voted £18 in 12 instalments —Widow aged 59 of L S A. Lond who practised at Bournemouth and died in 1913 Has endeavoured to earn a living by taking in lodgers but since the war has been unsuccessful and has only received £3 this year Has received a gift of £26 from another society Relieved twice £24 Voted £12 in 12 instalments —Daughter aged 54 of M R C S Eng who practised in London and died in 1881 Left without means and very delicate and her small income has had to be expended on medical attention Income £25 from another society Relieved seven times £74 Voted £10 in two instalments —Daughter aged 51, of M R C S Eng who practised at Gillingham and died in 1914 Applicant left without means her father having been an annuitant of the Fund for some years Never trained to work and can only earn a few shillings a week in a domestic capacity Relieved three times £29 Voted £12 in 12 instalments —Widow, aged 74 of M R C S Eng who practised at Rye and died in 1891 Applicant's income is not more than £50 per annum and she has cataract in both eyes Her two daughters are married and unable to help her Relieved once £12. Voted £12 in 12 instalments —Widow, aged 65, of M R C S Eng who practised at Yelverton and died in 1908 Left without means and endeavours to make a living by taking in boarders but is not successful Her eyesight is bad. Relieved ten times, £119 Voted £12 in 12 instalments —Daughters aged 44 51 and 55 of M.R C S Eng who practised at Bodmin and died in 1912. On the death of the father the life interest in an estate ceased and the only certain income of the applicants is £5 each Two suffer from bad sight and the other quite unable to work. Relieved once, £18 Voted £18 in 12 instalments jointly —Daughter aged 70 of M D Lond who practised at Cheltenham and died in 1879 Applicant was left without means and has always had bad health and is now suffering from acute rheumatism. Only income £39 per year from another charity and a small annuity Relieved three times, £36. Voted £12 in 12 instalments —Widow aged 43 of M R C S Eng who practised in North Wales and died in 1910 Applicant was left without means and had two young children now aged 10 and 7 years Lives with her aged parents who are not well off and can only provide a home Relieved five times £50 Voted £10 in two instalments.—Widow aged 75 of L.S A Lond who practised in Bermondsey and died in 1887 Applicant managed up to the commencement of the war by keeping a boarding house on the south-east coast but has had to close it down and is still responsible for various charges against the house Two children who help all they can Relieved once £15 Voted £2 and referred to the Guild —Widow aged 52, of M D Dub who practised at Widnes and died in 1915 Left totally unprovided for with three children only one of whom is working Applicant's health is very indifferent. Allowed to live rent free in a friend's house Relieved once £10 Voted £12 in 12 instalments —Daughter aged 56, of L.R C S Glasg who practised at Glasgow and died in 1883 *Endeavours to earn a living by teaching music* but cannot obtain sufficient pupils Only permanent income £25 Recommended by the Glasgow branch of the Guild. Relieved once £12 Voted £12 in 12 instalments —Widow aged 58 of L.S A Lond who practised at Limehouse and died in 1894 Applicant was left unprovided for with two young daughters both of whom are now working but only able to earn a little Earns a little by needlework but finds it difficult to meet expenses Relieved nine times £93 Voted £12 in 12 instalments.—Widow aged 71 of M D Edin who practised at Cambridge and died in 1908. Applicant endeavours to make a living by taking in boarders, but is not successful. Friends provide £18 per annum Relieved six times, £48 Voted £12 in 12 instalments —Wife aged 36 of M B Dub who practised in various places in England and Ireland Applicant had to leave him 18 months ago on account of his habits and cruelty One child 1½ years old Applicant is a trained nurse but unable to take permanent work on account of the child Relieved once £9 Voted £5 in two instalments —Widow aged 57 of L S A. Lond who practised at Islington and died in 1905 Applicant left unprovided for with two sons both of whom joined the Army one was killed and the other is missing Applicant is nearly blind and health is very precarious Relieved 12 times £145 Voted £18 in 12 instalments —Daughter aged 64 of M D Edin who practised in London and died in 1873 Applicant has two sisters and they endeavour to make a living by keeping a boarding house The recent death of the mother has depleted the family income, as she had a pension which died with her and the high cost of living makes it difficult to get on Relieved once £10 Voted £10 —Daughter aged 60 of M R C S Eng who practised at Yoxford and died in 1893 Has always had bad health and two relatives who used to help her have died Only income a pension of £29 from another society Relieved eight times £90 Voted £12 in 12 instalments —Daughter aged 69 of L.R C P Lond who practised at Brierley Hill and died in 1872 Has never been able to work through ill health and has recently fractured her ankle Only income a pension from another society of £25 Relieved nine times £65 Voted £12 in 12 instalments —Daughter aged 48 of M B Edin who practised at Southampton and died in 1886 Applicant is a trained midwife but owing to suffering from Bright's disease and heart trouble is unable to work Only income 10s 6d per week allowed by friends Relieved three times £24 Voted £12 in 12 instalments.—Widow aged 62, of L R C P Irel who practised at Liverpool and died in 1895 Applicant earns a living by nursing but owing to indifferent health and a bad cough unable to obtain permanent work and only earned £20 during the year Relieved four times, £29 Voted £12 in 12 instalments

The committee also granted special war time Christmas gifts of £1 each to 150 annuitants and 120 grantees Subscriptions may be sent to Dr Samuel West, hon treasurer, at 11, Chandos street, Cavendish square, London, W

THE KING has sanctioned the following promotions in the Order of the Hospital of St John of Jerusalem in England —Colonel Sir John Rose Bradford K C M G, C B, F R S, A M S Colonel Alfred Percy Blenkinsop C B, A M S, Colonel Sinclair Westcott, C B, C M G A M S and Surgeon General John Chislet Culling, A M S to be Knights of Grace, and Lieutenant-Colonel William Richard Blackwell R A M C, and Fleet-Surgeon Robert William Glennan Stewart R N,, to be Esquires

ROYAL SOCIETY OF ARTS (JOHN STREET, ADELPHI) —Amongst the lectures announced for the coming session are the following —W A M Goode, honorary secretary of the National Committee on "Relief Work in Belgium" (Jan 24th), Dr R Fortescue Fox on "The Future of British Spas" (Feb 7th) Lawrence Chubb, secretary of the Commons Preservation Society, on "Highways and Footpaths" The time in each case is 4 30 P M Admission is by ticket

ROYAL SANITARY INSTITUTE —A discussion will take place on Wednesday, Jan 31st, at 4 30 P M, at 90, Buckingham Palace road, on the physical welfare of children after infancy from the national, social, and public health standpoints The debate will be opened by Dr W Leslie Mackenzie, medical member, Local Government Board for Scotland The chair will be taken by Sir George Newman, chief medical officer, Board of Education

THE LATE SIR F W BORDEN —Frederick William Borden, who died last week in his seventieth year, came of medical parentage and was a medical graduate of Harvard, and entered the Canadian Army Medical Service as assistant surgeon to the 68th Militia Regiment (King's County) in 1869 He rose to the rank of surgeon lieutenant-colonel and honorary colonel, and was made an honorary surgeon general of the Imperial Army in 1911 He sat for 33 years in the Canadian Parliament

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week, such information for gratuitous publication.*

Cordingley Grace, L.S A. has been appointed Pathologist to the Venereal Diseases Department Royal Free Hospital.

Dinnick O T M R C S L.R C P Lond. Senior Assistant to the Venereal Diseases Department, Royal Free Hospital

Green Edith M N., M.B B S Lond., Senior Assistant to the Venereal Diseases Department Royal Free Hospital

Tocker, J., M B., C M., Medical Officer for the Morthoe District by the Barnstaple (Devon) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

Bath, Eastern Dispensary —Resident Medical Officer Salary £140 per annum, with furnished rooms &c.

Bolingbroke Hospital, Wandsworth Common S W —Resident Medical Officer and House Surgeon for six months Salaries £200 and £150 per annum respectively with board, &c.

Bolton Infirmary and Dispensary —Female Second House Surgeon Also Female Third House Surgeon. Salaries £200 and £180 per annum, respectively with board &c.

Bridgwater Hospital.—House Surgeon. Salary £120 per annum, with board, &c.

Bristol General Hospital.—House Surgeon for six months. Salary at rate of £175 per annum, with board, &c.

Cardiff King Edward VII s Hospital.—House Surgeon for six months

Chesterfield and North Derbyshire Hospital.—Second House Surgeon Salary £150 per annum with board &c

Dorset County Council.—Temporary Clinical Tuberculosis Officer Salary £350 per annum.

Guildford Royal Surrey County Hospital.—House Surgeon. Salary £200 per annum, with board. &c.

Harrogate, Furness Auxiliary Hospital.—Resident Medical Officer Salary £35 per month, with board. &c

Hospital for Sick Children Great Ormond-street London W C —House Surgeons Assistant Casualty Medical Officer and House Physician, unmarried. Salary at rate of £50 per annum each with board &c.

Huddersfield County Borough Education Authority —Assistant School Medical Officer Salary £350 per annum.

Leamington Spa, Warneford General Hospital.—Junior Resident Medical Officer Salary £150 per annum, with board. &c.

Leyton Urban District Council Education Committee.—Temporary Assistant School Medical Officer and Temporary Assistant Medical Officer of Health Salary at rate of £350 per annum

Liverpool, Brownlow Hill Institution —Resident Assistant Medical Officer Salary at rate of £300 per annum with rations &c.

Manchester County Asylum Prestwich —Locum Tenens Salary £7 7s per week, with board &c.

Manchester, Hulme Dispensary Dale-street Stretford road.—House Surgeon. Salary £250 per annum with apartments &c.

Newcastle upon Tyne, Royal Victoria Infirmary — Female Assistant in Venereal Diseases Department

New Hospital for Women Euston road.—Female Senior Clinical Assistant in Out patient and Ophthalmic Departments.

Northampton General Hospital.—House Surgeon. Salary £150 per annum with board &c.

Nottingham and Midland Eye Infirmary —Female House Surgeon.

Paddington Green Children's Hospital, London W —Clinical Assistant in Out patients Department, Monday and Thursday mornings

Plaistow Hospital for Infectious Diseases London E.—Temporary Resident Medical Officer Salary at rate of £250 per annum and all found

Portsmouth Borough Mental Hospital.—Locum Tenens Assistant Medical Officer Salary 7 guineas per week, with board &c.

Queen Mary's Hospital for the East End Stratford.—House Surgeon

Rochester, St Bartholomew's Hospital.—Clinical Assistant Salary at rate of £110 per annum with board &c.

Roxburgh District Asylum Melrose —Medical Superintendent Salary £500 per annum with residence &c.

Royal College of Surgeons —Election to the Court of Examiners

Royal National Orthopædic Hospital, 23, Great Portland street, W —Resident Surgical Officer

St Marylebone General Dispensary —Resident Medical Officer Salary £150 per annum with furnished apartments &c

Sheffield Royal Hospital.—Assistant House Surgeon unmarried Salary £120 per annum with board &c.

South London Hospital for Women 103 South Side, Clapham Common S W —Female House Physician for six months Salary at rate of £100 per annum, with board &c.

Surrey Education Committee.—Temporary School Dentist. Salary £300 per annum.

Ventnor, Isle of Wight Royal National Hospital for Consumption and Diseases of the Chest on the Separate Principle.—Assistant Resident Medical Officer

Victoria Hospital for Children Tite-street Chelsea, S W —House Surgeon for six months. Salary at rate of £200 per annum with board &c.

West End Hospital for Nervous Diseases, 73, Welbeck street W —House Physician. Salary £250 per annum, with board &c.

Worcester, City of —Female Temporary Assistant Medical Officer Salary £350 per annum

The Chief Inspector of Factories Home Office London S W gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Paignton Devon Foyers, Inverness shire Wartle, Aberdeenshire and Frodsham Cheshire

Births, Marriages, and Deaths.

BIRTHS

Barrow —On Jan 4th at Bishopton Lochgilphead Argyllshire the wife of Surgeon Murray Barrow R N of a son

Denham —On Jan. 3rd the wife of Captain Charles Holmes Denham R.A M C at Ladbroke-terrace of a son

Ewart —On Jan 2nd at North-street, Chichester the wife of Dr David Ewart, of a son

Lawrie.—On Jan 6th at Ryde House Woking the wife of John Lawrie M B C M of a son

Sutton —On Jan 4th at a nursing home, Southsea the wife of Captain E A. Sutton, M.C R.A.M C —a daughter

MARRIAGES

Campion–Shelley —On Dec. 30th 1916 at St Mark's Church Alexandria, Captain Rowland Burnell Maule Campion R A.M C to Kathleen Sybil daughter of Edgar Shelley of London and Melbourne

Okell—Roberts —On Jan 2nd at Holy Trinity Church Stratford-on Avon Captain Charles Cyril Okell, M C R.A.M C to Dorothy Gladys youngest daughter of the late W Owen Roberts Pulrose House, Isle of Man

Radley—Clayton Smith —On Nov 30th 1916, at St Thomas's Cathedral Bombay Captain S B Radley F R C S R A.M C to Gladys daughter of W E Clayton Smith of Pontefract

Sherris—Jones —On Dec. 30th 1916 at St George's Tufnell Park N Captain Cyril Sherris R.A.M C to Dorothy youngest daughter of the late Charles G Jones formerly of Exeter road Brondesbury

DEATHS

Bazalgette —On Jan 7th at Brent Knoll Somerset, after a short illness Sidney Bazalgette M.R C S., L.R C P Lond

Johnston —On Jan 4th at 31 Waverley street, Nottingham, James Hunter Johnston M B., M S Edin., aged 51

Morris —On Jan 6th at Parkside, Feltham, Middlesex Colin Dwight Morris M R C S L R C P aged 58

Townsend —On Jan 2nd at Clontymon Cork, Sir Edmond Townsend, K C B C M G Surgeon General (retired) aged 71

N.B —A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

BOOKS, ETC , RECEIVED

Arnold Edward London
Medical Diseases of the War By Arthur F Hurst, M A., M D Oxon F R.C.P., Temporary Major R.A.M.C 6s net

Baillière J B et Fils Paris
Les Appareils Plâtres. Par les Dr Calvé Chef du Service Central de Physiotherapie de la Région du Nord Chirurgien Assistant de l Hôpital Maritime de Berck-sur Mer et Dr Galland Interne des Hôpitaux de Paris 1 Vol in 18 de 88 pages 2 fr 60

Cassell and Co Limited London
The Nation's Health The Stamping Out of Venereal Disease. By Sir Malcolm Morris, K C V O 3s 6d net

Churchill, J and A. London
Poverty and its Vicious Circles By Jamieson B Hurry M.A M D 5s net.

Constable and Co London.
Some Modern Methods of Ventilation. With Special Reference to Public Buildings By R. Grierson A.M I M E A.M I.E E &c. 8s 6d net

Daniel, C W Limited London
Initis Nutrition and Exercises (47 Photographs) By A. Rabagliati M A., M.D F R.C S Ed 10s 6d net

Lippincott (J B) Co London and Philadelphia.
International Clinics Vol III 1916. Edited by H R. M Landis, M D and others 30s net per 4 quarterly vols

Longmans Green and Co London
On Causation with a chapter on Belief By Charles A. Mercier M D F.R C P., F R C S 4s net.

Lord Baltimore Press, Baltimore
Proceedings of the American Medico-Psychological Association at Old Point Comfort Va., May 1915

Macmillan and Co London
A Text book of Organic Chemistry for Students of Medicine and Biology By E V McCollum Ph D 10s net

Rockefeller Institute, New York
Studies from the Rockefeller Institute for Medical Research Reprints Vol XXIV

Unione Tipografico-Editrice Torinese, Torino, Milano Napoli Palermo Roma.
Trattato dei Neoplasmi Maligni, preceduto da uno studio sulle Infezioni Chirurgiche in Generale D D B Roncali. Vol Secondo Lire 34

University of Chicago Press (London Agents Cambridge University Press)
The Control of Hunger in Health and Disease By Anton Julius Carlson Professor of Physiology in the University of Chicago 9s net.

Wiley John and Sons New York. Chapman and Hall, Ltd London.
Manual of Psychiatry By J Rogues de Fursac M.D and A J Rosanoff M D Fourth edition, revised and enlarged 10s 6d net

Notes, Short Comments, and Answers to Correspondents.

HEALTH OF CEYLON

A REPORT prepared by Mr E Sueter, *Assistant Colonial* Secretary, on the affairs of Ceylon for the year 1915, *states* that the estimated population of the island (exclusive of *the military* and shipping) is about 4 424 300, an increase of nearly 107,600 on that of the previous year, due to an excess of about 51,100 births *over deaths and 55,000 arrivals* over departures of Indian coolies There are 113 males to every 100 females in the population of Ceylon The birth rate for the year was 37·0 per 1000 and the death rate 25·0 per 1000, *this latter being the lowest* on record since 1898, when improved registration began with the exception of the rate in 1904 when it was only 0 1 less 171 infants under one year died to every 1000 born, against an average of 195 This rate is the lowest recorded during *the preceding decennium The proportion* of deaths in the general community from certain principal causes to a million of the estimated population was as follows Infantile convulsions 2596, diarrhœa 2465, bronchitis and pneumonia, 1146, phthisis and other forms of *tuberculosis*, 952, *dysentery*, 774, ankylostomiasis, 468, malaria and malarial cachexia 390 premature birth and congenital defects, 307 cancer, 92, enteric fever, 88 and small pox, 35 Plague which broke out in 1914 for the first time in the history of *Ceylon*, is still *continuing, though the victims claimed in* the year under review are very much less, as will be seen by the following record Total cases in 1914, 413, ditto in in 1915, 139 total deaths in 1914, 381, ditto in 1915, 128 *On the other hand* and contrary to expectations, there was *no diminution* in the virulence of the disease the total case mortality being 92 per cent, as in the previous year 108 deaths per million were due to accidental drowning, 80 to falls from trees, and 53 to snake bite, 342 deaths were *attributed to homicide, against an average of* 181 This corresponded to *a rate of 77 per million—the highest* ever recorded in Ceylon—and was due to the riots in June The number of executions, too, rose to 76 from an average of 29, owing to the same cause

There are 78 Government *hospitals* (in addition to the lunatic and leper asylums) equipped with modern hospital furniture and surgical appliances The owners of estates have also provided 54 estate hospitals and 353 dispensaries Four new *hospitals* are under construction A general rebuilding scheme is in contemplation for the improvement of the Medical College The full course of training for medical students is five years, a diploma in medicine, surgery, and midwifery (which can be *registered in the United Kingdom*) is granted to successful medical students In Colombo there are a bacteriological institute an ophthalmic hospital, a lying in home, a hospital for women and children and one for infectious diseases, *there is also an establishment for the manufacture of calf lymph* The leper asylum, situated six miles from Colombo, contained 402 patients at the end of the year, the total treated during 1915 numbered 509 A smaller establishment for lepers exists at Kalmunai and has *accommodation for* 30, and it is now proposed to establish a leper colony at Mantivu in the Eastern Province

The highest annual rainfall registered was at *Carney* Estate, Ratnapura, which had a *total of* 266 8 inches, and the lowest was at Mantota in Mannar, which had a total of 25 85 The annual rainfall at Colombo (Cinnamon Gardens) was 96 81 inches The station showing the highest mean shade temperature *for* the year was Trincomalee with 84 4° F and the lowest Nuwara Eliya with 60 7° The figures for Colombo and Kandy were 81·0° and 77 1° respectively

STEAM DISINFECTING APPARATUS

WE have *received from* the Grampian Engineering Company, *Limited, of* Stirling, N B, and 43, Aldwych, London, W C, an interesting brochure on "Modern Steam *Disinfection*" in which are described the "Velox" *high pressure steam* and combined *current-steam* and vacuum formalin disinfectors. The merits of these methods of physical disinfection are closely discussed and full illustrations of the various types of apparatus are given *Practical* experiments are quoted demonstrating the sterilising efficiency *of the machines.*

T B—The statement was a definite and *precise* one and made as *long ago* as August 1st, 1916 In reply to a question by Mr J Anderson in the House of Commons, Mr Forster stated as follows "Instructions have been issued *to* recruiting medical boards *to* ask each man *definitely whether* (*a*) he *has* been under treatment in a sanatorium, (*b*) his name has been notified to the sanitary authorities as suffering from *consumption? No man* whose answer to either of these questions in the affirmative will be taken into the Army, but it will obviously be *necessary to verify his* statements." Mr Forster went on to add that the Local Government *Board had* arranged for local tuberculosis officers to supply particulars of all men of military age on the tuberculosis registers, and *that these* particulars would be supplied to the recruiting authorities *with instructions that such men* were not to be accepted for service In cases of doubt *the advice of* tuberculosis officers was to be asked for

N A M—A special course on the diagnosis and treatment of venereal diseases is being held for London panel practitioners at the Rochester Row Military Hospital, S W and this is *open to all medical men* Application should be made to Lieutenant-Colonel L W Harrison R A M C, at the hospital Lectures have been announced at the London and Guy's Hospitals and will doubtless be *arranged at other* metropolitan and provincial hospitals Details will be *given in our column devoted to control of* venereal diseases 'A System of Syphilis," edited by D'Arcy Power and Murphy (Oxford Medical Publications second edition *1914 Five volumes £2 2s*) is the most complete work *in English on the subject* "A Manual of Venereal *Diseases*" (same publisher second edition, 1913, 10*s* 6*d* net) is a practical volume The Report of the Royal Commission on Venereal Diseases is a mine of information on the whole subject

ERRATUM—In the Annus Medicus in THE LANCET of Dec 30th, 1916 (p 1116), under the heading of "Army Medical Service," we referred to the duplication of the office of Director-General and included the following phrase "While Sir Alfred Keogh, who had been Director General up *to 1910*, and *who* was in 1915 acting as Chief Commissioner for the British Red Cross Society in France and Belgium became Director General of the Army Medical Service at home" The year should have been stated as 1914 and not 1915

COMMUNICATIONS not noticed in our present issue will *receive attention in our next*

Medical Diary for the ensuing Week.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street W

MEETINGS OF SECTIONS

Tuesday Jan 16th

GENERAL MEETING OF FELLOWS: at 5 P M
Ballot for Election to the Fellowship

Wednesday Jan 17th.

HISTORY OF MEDICINE (Hon Secretaries—*J D Rolleston Charles Singer*): at 5 P M
Exhibition of Books Portraits &c (at 4 30 P M)
Paper
Mr R R Steele: A Mediæval *Panacea*

Thursday, Jan 18th

DERMATOLOGY (Hon Secretaries—J B R. McDonagh Henry MacCormac): at 5 P M
Cases (at 4.30 P M)

Friday Jan 19th.

ELECTRO THERAPEUTICS (Hon. Secretaries—*B* P Cumberbatch, *Robert Knox*) at 8 30 P M
A CLINICAL EVENING will be held in the Electrical Department of St Bartholomew's Hospital

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LONDON DERMATOLOGICAL SOCIETY, *St. John's Hospital 49 Leicester-square, W C*

TUESDAY—4 30 P M, Clinical Cases will be shown by Capt W Griffith R.A.M C, Dr J L Bunch Dr W K. Sibley *Dr C* Kempster and Dr M Dockrell. Paper:—Dr C Kempster: The Action of X Rays upon Diseases of Bacterial Origin.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST GRADUATE COLLEGE West London Hospital Hammersmith road, W

MONDAY—2 P M Medical and Surgical Clinics. X Rays Mr Gray: Operations Mr B Harman Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY—2 P M. Medical and Surgical Clinics. X Rays Mr Baldwin: Operations Dr Banks Davis: *Diseases of the Throat,* Nose and Ear *Dr Pernet*: Diseases of the Skin.

WEDNESDAY—10 A.M Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose, and Ear 2 P M. *Medical and Surgical Clinics* X Rays Mr Pardoe: Operations Dr Simson: *Diseases of Women*

THURSDAY—2 P.M. Medical and Surgical Clinics X Rays Mr Gray: *Operations* Mr B Harman: *Diseases of the Eye.*

FRIDAY —10 A.M. Dr Simson Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr Banks Davis Diseases of the Throat, Nose, and Ear Dr Pernet Diseases of the Skin.
SATURDAY —10 A.M., Dr Saunders Diseases of Children Dr Banks Davis Operations of the Throat, Nose, and Ear Mr B Harman Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Pardoe Operations.

NORTH EAST LONDON POST-GRADUATE COLLEGE Prince of Wales's General Hospital, Tottenham, N

MONDAY —Clinics —10.30 A.M. Surgical Out patients (Mr E Gillespie) 2.30 P.M., Medical Out patients (Dr T R Whipham) Gynæcological Out-patients (Dr Banister). 3 P.M., Medical In patients (Dr R. M. Leslie)
TUESDAY —2.30 P.M. Surgical Operations (Mr Carson) Clinics — Medical Out patients (Dr A. G Auld) Surgical Out-patients (Mr Howell Evans) Nose, Throat, and Ear Out-patients (Mr C. H. Hayton) Radiography (Dr. Metcalfe) 3.30 P.M. Medical In patients (Dr A. J Whiting)
WEDNESDAY —Clinics —2.30 P.M., Throat Operations (Mr C H. Hayton) Children Out patients (Dr T. R Whipham) Eye Out-patients (Mr R. P Brooks) Skin Out patients (Dr H. W Barber) 5.30 P.M., Eye Operations (Mr R. P Brooks)
THURSDAY —2.30 P.M., Gynæcological Operations (Dr A. E Giles) Clinics —Medical Out patients (Dr A. J Whiting) Surgical Out patients (Mr Carson) Radiography (Dr Metcalfe) 3 P.M., Medical In patients (Dr R. M. Leslie)
FRIDAY —2.30 P.M. Surgical Operations (Mr Howell Evans) Clinics —Medical Out patients (Dr A. G Auld) Surgical Out-patients (Mr E. Gillespie) Eye Out-patients (Mr R. P Brooks)

THE THROAT HOSPITAL, Golden-square, W

MONDAY —5.15 P.M. Special Demonstration of Selected Cases.
THURSDAY —5.15 P.M. Clinical Lecture.

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN 49 Leicester-square W C

THURSDAY.—6 P.M. Chesterfield Lecture:—Dr M. Dockrell Tuberculosis of the Skin and Lupus Erythematosus

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute, 37 Russell-square W C

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions—
WEDNESDAY — P.M., Lecture I.—Miss J Lane-Claypon, M.D: Principles of Organisation and Administration in Child Welfare Work Lieut.-Gen. Sir Robert Baden Powell, K.C V O., and Mr F J Willis, C B. have promised to take part in the discussion.

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TUESDAY —3 P.M. Prof. C S. Sherrington The Old Brain and the New Brain, and their Meaning. (Lecture I.)

METEOROLOGICAL READINGS

(Taken daily at 8.30 a.m by Steward's Instruments)

THE LANCET Office Jan. 10th, 1917

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Jan. 4	...	71	43	45	40	45	Cloudy
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ABSTRACT OF A

Hunterian Lecture

ON

PAGETS DISEASE OF THE NIPPLE *

Delivered before the Royal College of Surgeons of England on Feb 16th, 1917,

By W SAMPSON HANDLEY, M S Lond ,
F R C S Eng ,
HUNTERIAN PROFESSOR CAPTAIN R A.M.C.(T) SURGEON TO THE MIDDLESEX HOSPITAL.

(*From the Bland-Sutton Institute of Pathology, the Middlesex Hospital*)

Mr. President and Gentlemen,—It is impossible to lecture on Paget's Disease of the Nipple without quoting from his original paper,[1] not only as a token of respect to pioneer work, but also because little of importance has since been added to its discoverer's clinical description of the disease Moreover, it is impossible to summarise the paper, for it possesses in the highest degree those virtues of compression and concentration which are sometimes lacking in the medical writing of to-day Sir James Paget says —

> I believe it has not yet been published that certain chronic affections of the skin of the nipple and areola are very often succeeded by the formation of scirrhous cancer in the *mammary gland.* I have seen about 15 cases in which this has happened, and the events were in all of them so similar that one description may suffice
>
> The patients were all women, various in age from 40 to 60 or more years, having in common nothing remarkable but their disease In all of them the disease began as an eruption on the nipple and areola In the majority it had the appearance of a florid, intensely red, raw surface, very finely granular, as if nearly the whole thickness of the epidermis were removed, like the surface of very acute diffuse eczema or like that of an acute balanitis From such a surface, on the whole or greater part of the nipple and areola, there was always copious, clear, yellowish, viscid exudation
>
> It has happened that in every case which I have been able to watch, cancer of the mammary gland has followed within at the most two years and usually within one year The eruption has resisted all the treatment, both local and general, that has been used, and has continued even after the affected part of the skin has been involved in the cancerous disease
>
> The formation of cancer has not in any case taken place first in the diseased part of the skin It has always been in the substance in the mammary gland, beneath or not far from the diseased skin, and always with a clear interval of apparently healthy tissue

Subsequent Observations

Erichsen drew attention to the sharp definition of the eczematous patch, and made the important observation that the affected area is slightly indurated, a point of distinction from ordinary chronic eczema Wickham and Bowlby noted the flattening and disappearance of the nipple, sometimes passing into retraction, which is a constant feature of the disease

A specimen in the Museum of the Cancer Hospital, taken from a case under the care of Mr Charles Ryall, appears to indicate that Paget's disease may undergo complete spontaneous healing In this case a carcinoma is present in the subjacent breast Partial attempts at epitheliation are frequently seen in the diseased area

Histology

Two years after Paget's disease had been described the foundations of its histology were well and truly laid by Sir H T Butlin He found that the mucous layer of the epidermis of the eczematous skin underwent proliferation and increased in thickness It was occasionally traversed by fine fibrous bands, fibro-cells or spindle-cells The corium and subcutaneous tissue were indurated and infiltrated with small round cells (leucocytes) The milk ducts were widely open or distended They were not lined as in the normal condition by cylindrical epithelium, but contained frequently large masses of epithelium of the squamous or glandular form The connective tissue round the ducts was often infiltrated with small round cells. These changes in the ducts extended into the breast an inch or more beneath the nipple In one of the two cases examined the acini showed a proliferation similar to that often observed in the neighbourhood of carcinoma of the breast[2]

Butlin's observations are a very accurate description of the histological appearances. He inferred from them, as Paget did also, and both, I think, erroneously, that the eczema was the primary condition, and that the deeper changes were the result of it It is to be specially noticed that Butlin found *no* sign of malignancy in the surface epithelium, and he noted the interesting fact, to which I shall again refer, that it might be invaded by the connective tissue of the dermis He noted the induration and infiltration of the corium, which I believe to be an important guide to the pathogenesis of the disease

Enumeration of Erroneous Pathological Views.

Since 1876 the exact pathology of Paget's disease has remained a perennial subject of doubt and debate. It may be well at the outset to clear the ground by enumerating those views concerning it which are beyond doubt erroneous.

Is Paget's disease an ordinary eczema? On the joint authority of Dr Graham Little and of my colleague Dr Pringle, I can tell you that the microscopic appearances of Paget's disease are quite unlike those of an ordinary eczema Moreover, ordinary eczema of the nipple yields to treatment, and induration is absent in chronic eczema

Parasitic theory of Darier —In 1889 Darier found within the squamous epithelial cells of the diseased nipple certain peculiar appearances, now generally admitted to be the result of cell-degeneration, which he believed to indicate the presence of intracellular parasites His views gave rise to an extensive literature and to an admirable monograph by Wickham, but since he has had the courage and frankness to abandon them they need not further detain us

Distinction from squamous-celled carcinoma of the nipple —It is necessary to distinguish sharply between squamous-celled carcinoma of the nipple and Paget's disease Dr Browning has lent me a characteristic example of squamous carcinoma which I now show you In squamous celled carcinoma of the nipple there is seen a hard, elevated tumour of greater area than the normal nipple, which it replaces, and bounded by an everted or rampart-like edge. The flattened top of the swelling is irregular from ulceration, often sloughy, and it lacks the smoothness and brilliant colour which characterise Paget's disease Microscopically, squamous carcinoma presents the usual blunt down growing columns of prickle epithelium containing cell nests, while in Paget's disease, though the papillæ are exaggerated and the thickened stratum mucosum may show a few rudimentary cell nests there is no sign of invasion of the dermis by the overlying epidermis.

Paget stated rightly that the formation of cancer never takes place first in the diseased portion of the skin, though the eczematous surface might later become involved in the cancerous tissues from which at first it was separated by an interval

Several observers have found microscopic evidence in Paget's disease of epitheliomatous down growth such as precedes or constitutes a squamous carcinoma of the skin, among them are to be reckoned Darier, Karg, Fisse, and Rolleston and Hunt Butlin and Wickham found appearances suggestive of squamous carcinoma Bowlby, Unna, and G T Jackson reject the idea What is the reason for this conflict of evidence? It appears to depend first upon the fact that squamous carcinoma of the nipple is sometimes erroneously diagnosed as Paget's disease upon clinical examination But it chiefly arises from this circumstance that in Paget's disease there is elongation of the inter papillary columns of epithelium (Wickham, Bowlby, Rolleston and Hunt), together with an invasion of the epidermis by islets of fibrous tissue It will be shown later that this elongation is due to passive stretching, not to active down growth

We may, I think, dismiss the view that there is any real connexion between Paget's disease and squamous carcinoma of the nipple, though it still holds a place in some current text-books of pathology But a word must be said about a curious German variant of this theory

Intra-epidermal carcinoma —The degenerate deeper layers of the epidermis which contain the large clear cells known as Paget's cells, were taken by Schambacher to be a layer of malignant epithelium thrusting itself between the dermis and the superficial layers of the epidermis He and Jacobaeus thought they could sometimes trace a continuity between these cells and the cells of a glandular carcinoma of the breast beneath

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* This lecture will appear in full with illustrations in an early number of the British Journal of Surgery

[1] Sir James Paget St. Bartholomew's Hospital Reports 1874, x

[2] The Minute Anatomy of Two Breasts the areolæ of which had been the seat of long-standing eczema, by Henry Trentham Butlin F R C S Surgical Registrar to St. Bartholomew's Hospital, Medico-Chirurgical Transactions, 1876, lix , 108-9

This is not the case in any specimen I have examined In some exceptional cases the carcinoma beneath may infiltrate up to the epidermis and its cells may abut on squamous epithelium But the relation is one of contiguity or slight intermixture, for as Fisso truly stated, the two varieties of cells remain easily distinguishable at a little distance from their point of contact [3]

CHANGES IN THE EPIDERMIS IN PAGET'S DISEASE

What, then, in point of fact are the changes which are found in the epidermis in Paget's disease? They may be divided into two stages, hypertrophic occurring at the periphery of the affected area, and atrophic occurring at its centre Over the whole area the horny epithelium has for the most exfoliated and disappeared

Hypertrophic Stage

Butlin, Thin, Duhring, and Wile drew attention to the proliferative thickening seen in the deeper layer, or stratum Malpighii of the epidermis This proliferation accounts for the slightly elevated, sharply defined border which clinically characterises the disease (Thin, Duhring, Wickham) Wickham accurately pictures the epidermis as riddled with vacuoles and presenting cellular disorganisation with consecutive proliferation The cells dissociate and lose their normal close cohesion The individual cells display the polymorphic degeneration on which the parasitic theory was founded Rifts and clefts appear in the close structure of the epithelium, more especially in the interpapillary processes which often display a central cavity or vacuole like space (Duhring and Wile) Duhring, Wile, Rolleston, and Hunt agree in describing this process as an œdematous degeneration of the epidermis, a description clinically confirmed by the thin alkaline discharge characteristic of the disease The length of the interpapillary columns of epithelium is much increased, sometimes to four times the normal But the naked eye, or a low power of the microscope, shows that the general boundary line between epidermis and dermis remains perfectly defined, without a suggestion of epitheliomatous downgrowth

Atrophic Stage

The gradual ruin of the epidermal architecture is hastened by intrusive bands of fibrous tissue or islets of round celled infiltration which insinuate themselves into the clefts of the moribund epidermis like ivy in an old wall The overgrown stratum Malpighii no longer holds together, and is reduced to a layer two or three cells thick, or is completely cast off in the discharge, exposing the tips of the papillæ The elongated interpapillary columns degenerate and disappear During this process islets of epithelium, which simulate epithelial downgrowths, are often for a time left embedded in the fibrous tissue But at a later stage the interpapillary columns have disappeared and the papillæ are in consequence laterally fused and unrecognisable Finally, and this stage is not often reached, the surface of the nipple is bare of epithelium, and is formed by a layer of granulation tissue

From this account it is obvious that the epidermis is the passive victim of deeper changes, not the assailant of the tissues beneath No analogy can be drawn between the flat florid weeping surface of Paget's disease, persisting for long periods without ulceration or fungation, and any known form of malignant disease Here I may turn aside for a moment to consider other cases in which degenerating or ill nourished epithelium suffers invasion by fibrous tissue

Invasion of the epithelial layer of the skin by fibrous tissue is a process which is very common though it is not recognised in works on pathology It may be studied at the bottom of the tonsillar crypts where the squamous epithelium is seen in the process of destruction by intrusive bands of fibrous tissue I have shown that de Morgan's spots, which are such common manifestations of cutaneous senility, are due to telangiectases occurring in intrusive islets of fibrous tissue embedded in the thickness of the epithelial layer of the skin [4]

Our discussion so far has led us to reject the parasitic theory of Paget's disease, to distinguish the affection sharply from epithelioma and to conclude with certainty that the surface epithelium of the affected nipple is not the seat of any malignant change, but that the changes in it are inflammatory or nutritional only and dependent upon œdema

CHANGES IN THE DERMIS

We have considered the changes in the epidermis, those in the dermis remain to be described

Broadly speaking they consist of œdematous swelling of the papillæ, with consequent stretching of the interpapillary columns of epithelium A band of round-celled infiltration is seen in the papillary layer, separated at first by a narrow interval of intact dermis from the overlying epithelium According to Unna, this band of infiltration is composed chiefly of plasma cells It lies in the plane in which the cutaneous lymphatics originate, a point to be especially noted In some specimens the band of infiltration is absent the superficial layer of the dermis is fibrotic, and the papillæ have disappeared, appearances indicating the fibrosis which ultimately results from round-celled infiltration The dermis is thickened, producing the superficial induration which is clinically evident

The deeper layers of the dermis though they show thickening, are otherwise little changed They show perivascular collections of round cells, and in some specimens groups of epithelial cells lying in lymphatic spaces can be seen This description, based upon my own observation, can be confirmed in every particular upon a perusal of the literature of the subject Broadly speaking, it shows a chronic œdema of the dermis with pachydermia

As the papillæ increase in size they stretch the interpapillary columns of epithelium and produce the deceptive appearance of downgrowth in these columns which has been noted by so many observers Later the mutual pressure of the swollen papillæ leads to the atrophy and disappearance of the interpapillary columns The fused papillæ are then no longer recognisable, and they appear to undergo a process of fibrosis which flattens them out The overlying epithelium, partly as the result of mechanical stretching and partly from œdema, suffers the changes already described It is probable that in these changes superficial bacterial infection plays some secondary part, though an undetermined one Of course, staphylococci are always present in the epidermis

CARCINOMA THE PRECURSOR OF PAGET'S DISEASE.

We must next consider a paper by Dr George Thin, published in 1881 Thin put forward the view that the primary lesion is an ordinary carcinoma of the breast, originating in the ducts, and that the changes in the nipple are secondary both in time and in importance As Thin truly says [5] —

> From what we know of the slow changes that frequently mark the earlier stages of cancer of the skin (in rodent cancer, for example) there can be little difficulty in accepting it as probable that cancerous changes are developing in the ducts long before they have given rise to sufficient induration to produce a palpable tumour

His paper marks, in my opinion, a great advance It has unfortunately been misunderstood owing to an unfortunate choice of title In order to distinguish Paget's eczema sharply from true eczema he suggested for the former condition the name "malignant papillary dermatitis" The word "malignant" is misleading, for it suggests what Dr Thin did not believe—the malignancy of the surface epithelium in Paget's disease

To prove in all cases the correctness of Thin's view that carcinoma of the breast precedes eczema is impossible But there is much evidence in its favour

Impalpable Carcinoma

A carcinoma of the breast may exist for years, may permeate the breast-lymphatics, may disseminate, and may cause death without ever giving rise to a palpable tumour in the breast Time forbids me to discuss this subject in detail and I have dealt with it fully elsewhere This drawing which I show you is an impalpable carcinoma arising in a breast rather shrunken and indurated by chronic mastitis The growth was not adherent to skin or fascia, and could not be distinguished by touch from the granular mastitic induration of the remaining part of the breast But it had already given rise to infection of the axillary glands at the time when I removed the breast

You are familiar with cases where a mass of carcinomatous glands develops in the axilla, secondary to a carcinoma of the breast which can only be detected by microscopic examination

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[3] *Nature of the carcinoma accompanying Paget's disease*—In the microscopic examination of specimens of breast carcinoma accompanied by Paget's disease though most observers agree with Thin that the growth is usually a duct carcinoma doubt may arise whether the growth is an ordinary spheroidal-celled carcinoma. Sometimes the appearances of both forms of growth are present, as in Jordan Lloyd's case and in one of my own This difficulty has been cleared up by Lenthal Cheatle who has proved that many so-called spheroidal celled growths are really duct carcinomata in which the epithelium has lost its original columnar character

[4] Handley: Archives of the Middlesex Hospital

[5] Thin: Brit Med Jour May 14th and 21st 1831

In Paget's disease flattening or retraction of the nipple is an early sign, appearing long before a lump is felt in the breast It is recognised as peculiarly a sign of carcinoma Yet even at the time when a lump can be felt it is rare to find enlarged axillary glands (Wickham) The combination of characters—early retraction and long freedom of glands—indicates a chronic carcinoma of low virulence

There is, therefore, no improbability in the assumption that carcinoma precedes and causes Paget's disease even when no lump can be felt in the breast.

In this connexion Mr Lenthal Cheatle's case is of interest By his method of large sections cut with a giant microtome he found a minute focus of carcinoma in a breast the seat of Paget's disease, although clinically and macroscopically there was no sign of carcinoma in the breast

I may remind you that in not a single case of Paget's series did a carcinoma fail to show itself sooner or later, and in no case did the carcinoma first show itself in the diseased area of skin Jamieson, quoted by Sheild, relates a case in which Paget's disease persisted for 20 years without the development of a cancer in the breast. Even in such a case the presence of a cancer during the whole period cannot be excluded, for the life of a breast carcinoma may exceed this duration, and it is even possible that the growth might undergo spontaneous cure, leaving Paget's disease as a result

HOW DOES A CARCINOMA OF THE BREAST CAUSE PAGET'S DISEASE?

Accepting Thin's view that Paget's disease results from a pre-existing carcinoma we are arrested by the question, How does carcinoma cause Paget's disease?

Thin believed that the papillary dermatitis, or so-called Paget's eczema, resulted from the irritant action of an acrid cancerous discharge from the mouths of the milk ducts The suggestion is unconvincing, for Paget's disease may appear in cases where no moisture about the nipple has at any time been noticed

In approaching this question I will ask you to recall to your memory certain researches of mine on the dissemination of carcinoma which date back to the year 1904 It may now be regarded as established that the main factor in the dissemination of carcinoma is the process of permeation, the growth of tendril like cylinders of cancer cells along the easy routes provided by the lumina of the lymphatic vessels This process must be sharply distinguished from infiltration of the tissue interspaces

Obviously one of the results of permeation is to block the lymphatic vessels. It was, therefore, not surprising to find that lymphatic œdema frequently follows in the tissues whose lymph should normally drain away along the obstructed lymphatic vessels Œdema may sometimes come on before permeation has reached the lymphatic vessels of the œdematous part owing to a block lower down the course of the lymphatic stream

The commonest example of this condition is early cancer *en cuirasse* which in its origin, and apart from the nodular invasion by cancer which accompanies its later stages is a pure lymphatic œdema due to the blocking of the lymphatics of the subjacent fascial plexus by permeation I have suggested for it the name "cancerous pachydermia" The affected skin becomes thick and leathery, and in one early example which I examined the thin skin of the breast had attained a thickness of 6 mm, though it showed no sign of cancerous infiltration Sometimes but not usually, the affected skin becomes red and discoloured or again covered by eczematous crusts

Histologically the epithelium is found thin and atrophic with its horny layer peeling off Round-celled infiltration may be found in the superficial layers of the dermis, while in the deeper layers are perivascular collections of similar round cells, marking out the track of the obstructed lymphatics The papillæ of the dermis at first swollen by œdema, are later flattened out and obliterated by a secondary fibrosis

Causation by Œdema due to Permeation of Lymphatics

The similarity of these appearances with those seen in the skin of the nipple in Paget's disease was too strong to be overlooked and I formed the definite opinion that Paget's disease is due to lymphatic œdema of the nipple dependent on the blocking of the lymphatics by permeation extending from a pre-existing carcinoma of the breast The idea was confirmed by the definite papyraceous induration which is found in the affected area It explained the persistence of the smooth, red, raw area over long periods of time without marked tendency to ulcerate or fungate—facts impossible to associate with a surface composed of malignant tissue. The serous discharge was a lymphorrhœa from the blocked area of the skin The association of chronic "eczema" with lymphatic œdema is a familiar one, often seen on the legs in cases of elephantiasis and in other milder grades of lymphatic obstruction The peculiarities of Paget's "eczema" might be explained by the anatomical peculiarities of the nipple, its rich blood supply, its thin skin. The lymphatics of the ducts converging to the subareolar plexus would naturally carry permeation with especial rapidity to this plexus in the form of growth—namely duct cancer, which is particularly associated with Paget's disease Subsequent fibrosis of these lymphatics would naturally lead to flattening or retraction of the nipple

But upon consideration it appeared to me that the case thus made out was a *prima facie* one only Since 1904 I have taken such opportunities of examining cases of Paget's disease as have presented themselves, hoping to find a case in which permeation could be demonstrated. Meantime in 1912 I put my views briefly on record as a statement of opinion.[6]

The difficulty to be overcome lay in the fugitive nature of the process of permeation A permeated lymphatic becomes distended by the growth of the cancer cells within it, and an inflammatory reaction is thus excited Round-celled infiltration is followed by fibrous tissue formation and the included cylinder of cancer cells is ultimately strangled by the contraction of this newly formed fibrous tissue The original lymphatic is now represented by a solid fibrous thread and all local traces of the carcinoma have disappeared leaving lymphatic obstruction as a legacy

It was not until after 12 years that by a fortunate chance I met with the very early example of Paget's disease which I shall now describe. It showed a perfect and nearly complete permeation of the lymphatic vessels of the "eczematous" area of skin (Figs 1 and 2.) In looking at the section I was able in some degree to share the sensations of the astronomer Adams when he first beheld the planet of his calculations in its predicted position.

A healthy looking and well-developed man of 49 was recently sent to me by Dr J W F Jewell The patient noticed a button like induration of the right nipple four months before he sought medical advice. There had been no pain and no discharge from the nipple. The nipple was flattened, while the areola slightly raised above the surrounding surface, presented a bright red, slightly granular, dry surface with a few epidermal scales adherent to it Beneath the indurated nipple was a little hard growth adherent to the overlying skin, but movable on the fascia beneath The glands in the right axilla were hard and slightly enlarged The growth was removed, together with the pectorals and the axillary glands, and the patient made a good recovery

Histologically the axillary glands were free from growth The primary growth was a very cellular carcinoma sharply marked off from the surrounding tissues. Its infiltrative powers were therefore rather low On its cutaneous surface however, it had obtained access to the subareolar lymphatic plexus and so to the cutaneous lymphatics These vessels were completely and perfectly injected as by an artificial injection fluid In the papillary processes of the dermis the blunt finger like dilated vessels forming the commencement of the lymphatic system were distended by cancer cells exactly like the cells of the growth (Fig 1) The appearance presented is just that of a dilated lacteal in an intestinal villus Running out of ampullæ of origin are narrower vessels which can be seen in some sections uniting in the superficial layers of the dermis to form vessels of capillary size presenting the moniliform dilatations which characterise lymphatic vessels These vessels take a course vertical or oblique to the skin surface and in the sections are often cut longitudinally and present Y-shaped junctions They run down to, and enter the subareolar plexus which is seen lying between the skin and the closely subjacent breast tissue as a number of vessels of larger diameter cut for the most part transversely, since the section is at right angles to the plane of the plexus

Serial sections afford clear proof that the longitudinally cut groups of cancer cells really lie in cylindrical vessels and not in chink like spaces. The whole arrangement of the vessels stamps them as belonging to the lymphatic and not the blood vascular system

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[6] Choyce's System of Surgery, vol ii., p 12.

In horizontal sections the comparison of the cancer filled spaces in the papillæ with the lacteal of an intestinal villus still holds good In such sections passing just deep to the apices of the papillæ a circular group of cancer cells occupies the middle of each papilla This appearance could never be produced by *fortuitous* infiltration It indicates with certainty that the cancer cells occupy pre formed anatomical *spaces—namely*, the vessels of origin of the lymphatic system (Fig 2)

Evidence Afforded by Above Case

A superficial critic might assert that what I have taken to be lymphatic vessels are in truth excretory ducts, passing to open on the surface of the skin A careful search through all my sections has shown that a *zone of dermis* invariably intervenes between the groups of cancer cells and the under surface of the epidermis Moreover, it is *obvious* that the apices of the V shaped unions of the *vessels* in question are directed away from the skin surface, not towards it, as would be the case if they belonged to the excretory apparatus of the skin Moreover, in numerous sections of the normal nipple no similar appearance could be detected

To complete the proof that my section shows lymphatics infected by cancer I attempted artificial injection of the lymphatics of the nipple with soluble Prussian blue My efforts in this direction have been limited by the preoccupations *of the war* But in one successful case the Prussian blue penetrated the papillæ of the skin almost to their tips, occupying the same central position as the cancer filled spaces in my specimen This *specimen* of injected skin must be allowed considerable anatomical value as demonstrating—so far as I know for the first time—the anatomy *of the origins of the* human cutaneous lymphatics It seems possible that this knowledge may be the key to advances in our knowledge of the pathology of various diseases of the skin

In regard to the actual measurements of my specimen of Paget's disease—

Over an area of 2 5 mm the epidermis is reduced to a layer consisting *of a thin sheet of* the rete Malpighii with deeply extending interpapillary processes as much as 6 mm in length —i e., about four times the normal length Beyond the periphery of this circle is an area of hypertrophied and thickened epidermis forming a circle with an outside diameter of 6 mm Here also the interpapillary columns of epithelium are much elongated This is due, not to down growth of the epithelium, but to œdematous hypertrophy of the papillæ of the corium, with consequent stretching of the interpapillary columns, for in the centre of the area the interpapillary columns are undergoing atrophy and some of them have disappeared altogether

Permeation of the skin lymphatics is recognisable over a circle 6 5 mm in diameter, and extends therefore just a little beyond the point where marked changes in the epithelium cease Permeation of the subareolar plexus extends over an area of 10 mm

These measurements show beneath the circular red area of dermatitis a larger circular area of permeated lymphatics, and beneath this again a still larger circular area of permeated deep lymphatics belonging to the subareolar plexus

Now the tendency of Paget's disease to spread centrifugally from its point of origin is a commonplace It may be inferred that that plane of the superficial tissues in which the affected circle is largest is the plane first affected The relative size of the infection circles measures in terms of space the lapse of time since each of the layers was invaded, and therefore the order of their invasion That is to say, the growth at first extends from the breast to the subareolar plexus and blocks it by permeation Next the process extends to the tributary lymphatics running from the skin to the subareolar plexus Lastly, as a result of lymph stasis from permeation œdematous hypertrophy of the papillæ is seen and nutrition fails in an area of the overlying epidermis

It is possible, of course, to conceive of the process reversed, and to assume that it *spreads more rapidly* once it reaches the subareolar plexus But the permeation of the lymphatics of the dermis cannot possibly be the result of the changes in the epidermis For the cells contained in these permeated lymphatics are not cutaneous cells but cells originating from the mammary epithelium For this reason I am entitled to conclude that the changes in the epidermis are secondary to the permeation *of the* dermal lymphatics, that the "eczema" is secondary to a pre existing carcinoma.

A third possibility remains, that the dermatitis and the permeation of the dermal lymphatics are independent events If so, how comes it that the areas are concentric? At either edge of the circles permeation of the dermal lymphatics is seen extending under œdematous skin just beyond the edge of the eczematous area *If this is* chance, books of logic might as well be burnt.

In this case the eczema had been present for four months only, whereas the average duration of the disease at the time of operation is something more like *four years* ample *time for the fibrotic processes* to destroy the lymphatics and *obliterate all* evidence of pathogenesis It is probably useless to look for permeation in the skin if the eczema is of long standing Those who would ask for evidence of permeation *in every case of Paget's* disease—who demand it to be shown in every case of a large series—fail to appreciate that disease is a biograph film and *not a* static entity, and that only one picture on the film one page torn from the novel, can be fixed and examined in any one case In most cases the picture or the page is inconclusive or insignificant Sometimes it reveals the essential secret.

The evidence of this case does not stand alone

A figure of Wickham's[7] (Plate II, Fig 2) almost duplicates the specimen I have just demonstrated It shows permeation extending under normal epithelium, while beneath the eczematous areas are permeated lymphatics distended by proliferated cancer cells, running vertically upwards into the papillary zone of the dermis Wickham appears to have considered that the epithelial masses were down growing processes of the epidermis His figure proves the incorrectness of this view, for the largest of these masses, though it touches the under surface of the epidermis, is sharply defined from it

Dubring and Wile found in the middle and lower layers of the corium alveoli of varying size, some of them "linear" containing typical carcinomatous epithelium These were present in both the cases they examined, and their observation distinctly points to permeation of the dermal lymphatics It is the more important in view of the general accuracy of their histological descriptions

I have also found evidence of persisting permeation in the deeper layers of the dermis in several cases of Paget's disease

Pathological Picture of the Disease

If the early specimen I have submitted to you be taken as the key and starting point, the various isolated otherwise unintelligible, phenomena of Paget's disease fall into their places like pieces in a jig saw puzzle Let me briefly picture the pathology of the disease in the light thus afforded.

A carcinoma starts in the smaller ducts of the breast, perhaps exceptionally from the acini or the larger ducts Usually, without producing a palpable tumour, it permeates the breast lymphatics widely The rich plexus of lymphatic vessels around the ducts forms an especially easy and convenient channel for permeation, and the lymphatic block extends along them to the subareolar plexus beneath the nipple

The cutaneous lymphatics about the nipple are now dammed up so that lymph cannot return from them Later they are themselves permeated, but possibly this is not always the case At this stage, and before any lump has appeared in the breast, *the* skin of the nipple and the mucosa of the ducts begin to show changes dependent upon lymphatic obstruction The epithelium shows disintegration and degeneration of its superficial layers with proliferation of the deeper layers These changes are nutritional and non malignant The dermis becomes thickened by solid lymphatic œdema The lymphatics of origin in the superficial layer of the dermis may be found filled with cancer cells, which are *also to* be seen in the lymphatics of the subareolar plexus

The permeated lymphatics now undergo the usual process of perilymphatic fibrosis, they become surrounded by aggregations of inflammatory round cells, and later by young fibrous tissue, which contracts upon and destroys the included cancer cells In most cases at the time the disease is removed the destruction of the cancer cells has been consummated, and there is seen merely a band of round celled infiltration in the superficial dermis while in the deeper dermis perivascular aggregations of round cells indicate the destruction of the lymphatics which are known to accompany the blood vessels in this layer In other and later cases organisation into fibrous tissue is complete, round cells have disappeared, the papillæ have been destroyed by the fibrous contraction which has taken place in them, and nothing remains to show that the lymphatic vessels of the dermis have been obliterated and replaced by fibrous cords save and except the persistent changes in the epithelium and the œdematous thickening of the dermis

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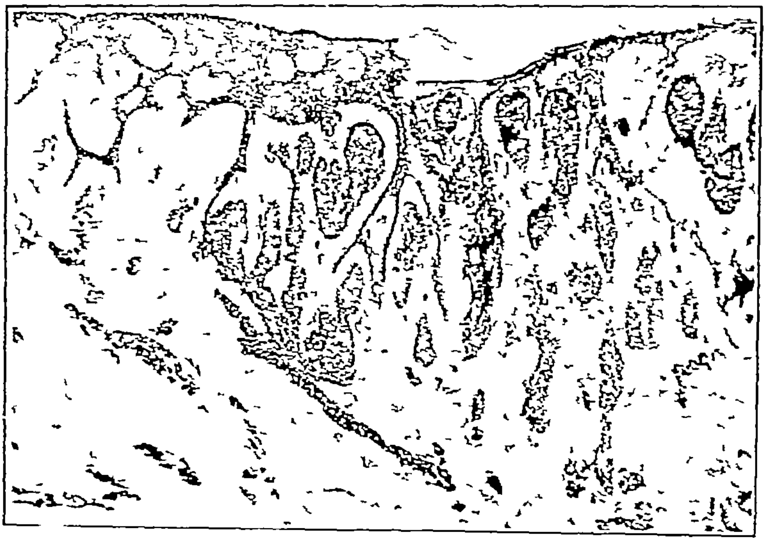
[7] Wickham Louis: Maladie de Paget Paris Masson 1890

In regard to the changes in the large ducts, these are evidently similar in nature to those found on the surface of the nipple, and they depend upon the same cause—namely lymphatic obstruction from permeation and subsequent fibrosis The only difference is that the shed epithelium cannot get away, and it remains *in situ* plugging and distending the ducts with a degenerate mass of débris

Lastly, even in the rare cases where though the Paget's disease has lasted many years, yet no carcinoma has made its appearance, it is probable that an atrophic scirrhus, which may have undergone partial or complete cure, preceded the onset of the Paget's disease But the possibility that the lymphatic obstruction in such cases is of inflammatory origin, and due to a chronic lymphangitis, cannot be altogether excluded

FIG 1



Vertical section through the edge of the area of Paget's disease showing the lymphatics of the dermis permeated and distended by cancer cells derived from the subjacent carcinoma. (Magnification 63 times)

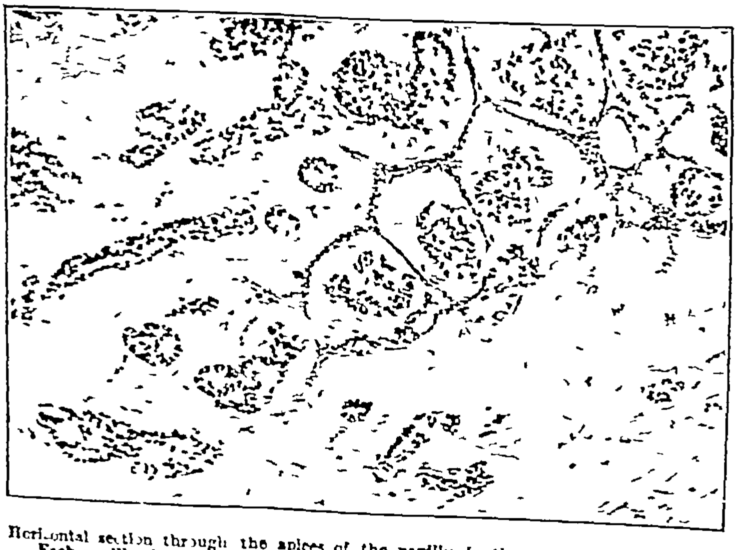
TREATMENT

It is sometimes stated, and more often thought, that pathology is no occupation for a serious-minded surgeon If this is true no sportsman should study the habits of his game Disease is the surgeon's quarry but he should walk it up casually by clinical observation or get it driven by pathological beaters The history of the treatment of Paget's eczema supplies a criticism of this theory Even so distinguished a man as Sir James Paget, led astray by superficial appearances and confessedly ignorant of its pathology, advocated a radically unsound method of treating the disease which he described so well He advised free excision of the eczematous area of the nipple a natural step to take if the eczema were in truth the precursor and cause of the cancer He admitted his want of success in preventing the development of cancer

Though, as the result of Thin's work, opinion has gradually turned in favour of treating such cases as ordinary carcinomata, a remaining doubt has often led to a dangerous delay and to the adoption of half hearted measures If it is once generally admitted that Paget's eczema is not the possible cause of a future carcinoma of the breast, but the result of an existing one—if, moreover, it is accepted as evidence that the growth has already widely permeated the breast—even though no palpable lump can be felt in it—then there will be no excuse for dilatory methods

The right treatment for Paget's disease is the usual complete operation for cancer of the breast It is my impression that duct-carcinoma the form of disease connected with Paget's disease, has a rather more favourable prognosis than carcinoma of the breast in general, and that it affects the axillary glands rather late Surgeon General Lenthal Cheatle tells me that, in his opinion, the post-operative prognosis of Paget's disease with carcinoma is a favourable one. The disease is so rare that statistics on the point are not available

FIG 2



Horizontal section through the apices of the papillæ in the area of Paget's disease Each papilla shows a central lymphatic permeated by cancer cells (Magnification 110 times)

CONCLUSION

It has been said that the ultimate test of a theory is its fruitfulness I may be permitted a certain satisfaction if—as I believe this lecture shows—the permeation theory of dissemination has emerged successfully from this final test

I have to thank Dr Browning director of the Bland Sutton Institute of Pathology at the Middlesex Hospital, for his kindness in placing the resources of the laboratories at my disposal for the purposes of this lecture, and for his suggestions as to methods of lymphatic injection Surgeon-General Cheatle has kindly allowed me to use his histological specimens

In conclusion, Sir, may I take this opportunity of thanking you, as representing this College, for the unsought recognition of my work implied in the recent grant to me of the quinquennial Walker prize for cancer research, an encouragement which has led me to present to you my views on Paget's disease

THE TREATMENT OF

SEVERE INFECTED GUNSHOT INJURIES OF THE SHOULDER AND ELBOW JOINTS,

EARLY EXCISION TO SECURE MOBILITY*

BY R H JOCELYN SWAN, M S LOND , F R C S ENG ,
MAJOR, R.A M C SENIOR SURGEON AND SURGICAL SPECIALIST ROYAL HERBERT HOSPITAL WOOLWICH SURGEON CANCER HOSPITAL, ETC

THE treatment of gunshot injuries to important joints, complicated by extensive comminution of the articular surfaces and by septic infection has received considerable attention, particularly in regard to the knee joint, where the anatomical conformation of the synovial membrane offers such difficulty in securing adequate drainage In a large number of severe injuries of the knee the best that can be hoped for, short of amputation, is an ankylosed joint, and the patient is left with a good prospect of earning his living A fixed shoulder or elbow, however, causes much greater physical disability as far as the earning capacity of the individual is concerned, and it is with the object of obtaining a movable and useful joint that I have adopted a method of early excision of the joint with such satisfactory results that I am tempted to put them together, with the hope that they may prove of assistance to others

The ultimate results obtained in the earlier period of the war after extensive injuries of both the shoulder and elbow joints were by no means satisfactory, drainage of the joint resulting in fixation of the articular surfaces, whilst sinus formation from necrosing fragments of bone often necessitated further operative measures before healing was obtained Fixation of the shoulder, with inability to abduct, flex, extend, or rotate the arm, is a serious disability whilst in the elbow any fixation at an angle about 80° renders the arm useless for feeding, whereas an elbow fixed at this angle is of very limited use for mechanical purposes In my earlier cases I considered it advisable to leave the joint alone after free drainage and removal of any obviously loose fragments of bone until firm healing was obtained and then proceeded to a formal excision of the joint but I found so much matting and infiltration of the ligaments, muscles, and structures in immediate relation to the joint from the previous septic inflammation, that not only was the operation rendered difficult, but the results obtained were not satisfactory In addition the time occupied in the healing of the original wounds, the liability to localised necrosis requiring local operations, and the pain experienced were a severe tax on the patient's strength and he was often inclined to refuse further operative procedure

In reviewing a large number of cases of gunshot wounds of the shoulder and elbow joints they may be roughly classified as (1) Penetrating wounds without fracture or sepsis , (2) penetrating wounds without fracture but with sepsis , (3) fracture of the articular surfaces without sepsis , and (4) fracture of the articular surfaces with sepsis

Each of these classes may be further complicated by the presence of a bullet or metal fragment, either embedded in the ends of the bone in the joint or in the tissue surrounding the joint In the majority of cases the bullet or fragment conveys infection with it from particles of earth or clothing accompanying it, and the question of removal must be decided upon in each individual case from the amount of trouble caused

The treatment of the joint depends as much upon the degree of sepsis arising as upon the anatomical injury produced Where no sepsis is present in the joint the wounds of entry and exit may be excised but not sutured, the joint fixed on some suitable splint and treated on general surgical lines Personally I must say that I regard the excision of primary gunshot wounds of a limited or even doubtful advantage, and have seen many cases of bad results from this practice Where septic infection has been conveyed to the interior of the joint more active measures must be adopted, and the joint cavity thoroughly irrigated

I would here note the difficulty in determining the presence of septic infection within the joint It has been frequently observed that the joint may be distended with pus containing streptococci, coliform organisms, and bacillus perfringens, but yet there is comparatively little pain, and the temperature and pulse rate are only slightly raised—in fact, a very different clinical feature to the acute septic arthritis of civil practice With a gunshot wound penetrating a joint, one may be tempted not to open the joint in the absence of constitutional disturbance, whereas delay where sepsis exists may make all the difference in the ultimate functional utility of the joint An inflamed area around the entrance or exit wound, the discharge of thin mucoid fluid on pressure, commencing thickening of the tissues around the joint, a slight elevation of temperature and a commencing leucocytosis are indications of infection and of the necessity of exploration and irrigation

It is, however, to cases of extensive bony injury to the articular surfaces, associated with a virulent infection, that I desire to draw attention These injuries are so extensive and appear at first sight so hopeless that the limb may be amputated, whereas if saved at the expense of a prolonged convalescence after free drainage and the removal of necrosing fragments of bone, the resulting fixation of the injured joint is a source of great physical disability to the patient The septic infiltration of the tissues surrounding the joint, together with the filling up of the actual fossæ in the bone around the joint by callus during the period in which the limb must be kept at rest, all tend to prevent mobility whilst the erosion of the articular cartilage in the pathological processes leads to absolute bony fixation

I was faced with this difficulty in a case of a young soldier whose right arm had been amputated immediately below the shoulder joint, and whose left elbow joint was extensively smashed and septic In this case fixation of the elbow at such an angle as to allow him to feed himself would have left him with an arm of little use for any other purposes, whilst fixation at 120°-150°, to give him the greatest mechanical advantage in the limb, would have rendered it useless for feeding After much consideration I decided to freely excise the damaged elbow joint, even in the presence of marked sepsis, leaving the cavity freely open and after three months this patient could flex and extend his elbow to a range of nearly 90°, and had excellent muscular power in the arm—in fact, he surprised us by lifting and flexing the elbow whilst holding a heavy scuttle of coals This case gave me much food for reflection, and I have since adopted the principle which I now advocate—namely, free and early excision in cases involving severe comminuted fracture of the articular surfaces of bone, complicated by septic infection with the direct object of obtaining a movable joint

The Treatment Adopted

Cases are received at Woolwich at varying periods from the date of injury but it is no uncommon thing for them to arrive within three days of being wounded In all septic cases I make a routine practice of giving an injection of a mixed polyvalent streptococcus and proteus vaccine as I have described elsewhere,[1] and the wounded area is carefully skiagraphed to determine the nature and extent of any bony injury and the presence of metal fragments I consider this preliminary injection of "antisepsis" vaccine of as much importance as the prophylactic injections of antitetanic serum as by its means the spread of anaerobic infection is limited

If the ends of the bone entering into the formation of the shoulder or elbow joint are severely fractured and if there is evidence of septic infection in the joint, I do not hesitate to open the latter freely, remove all completely detached fragments, and saw off the ends of the bone , the whole cavity is flushed with a forcible stream of hot sterile water and after arresting the bleeding gauze is very lightly inserted into the cavity, into which are brought three or four small perforated tubes attached to a reservoir containing Dakin's solution or hypertonic saline, by which the cavity is frequently flushed The incision is left freely open, perhaps one suture being used at the upper end In the case of the shoulder I make use of an oblique anterior incision between the deltoid and pectoralis major muscles opening the joint at the side of the long tendon of the biceps Frequently the actual damage to the bone is more severe than the radiograph would indicate, the head may be completely separated from the neck and displaced

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* A paper read before the Surgical Section of the Royal Society of Medicine, March 14th 1917

[1] THE LANCET, 1916 ii 859

If possible, the tuberosities and rotator tendons are left intact, but if the fracture involves the tuberosities they are removed, the periosteum being stripped from the upper part of the shaft and the bone divided through the surgical neck. A stab incision is then made from the posterior aspect of the joint backwards to come out behind the shoulder, or the bullet track used if conveniently placed and a drainage tube inserted, the flushing tubes being introduced by the anterior incision. The arm is then fixed in a fully abducted and slightly flexed position, and in my later cases I have made use of a special splint I have had made for me by Messrs Allen and Hanbury for both these cases and for gunshot fractures of the upper third of the humerus, in the latter extension being maintained from the flexed elbow The arm rests very comfortably in this splint the wound can be easily dressed without removing it and the patient is able to be up and walk about, the deltoid muscle is maintained relaxed and does not show the same degree of wasting as when the arm is fixed to the side

In the elbow I use a free, median, posterior incision, separating the tissues close to the bone and as far as possible preserving the triceps tendinous attachment, and of course, the ulnar nerve The lower end of the humerus is projected from the wound and removed as may be found necessary usually above the epicondylar line The olecranon is removed together with the upper cartilaginous surface of the coronoid process and the cupped disc of the head of the radius The cavity is then flushed with hot sterile water, lightly filled with gauze, and the irrigation tubes introduced The arm is put up flexed, and supinated, the wound being left freely open After a few days when granulations appear on the surface, passive movements are commenced and the forearm put up in a different angle of extension each day As the wound fills up voluntary actions are encouraged

In two cases of severe fracture into the elbow I have been content with the removal of the fractured humeral condyle leaving the olecranon and radius untouched In each case the internal condyle and trochlear surface was removed at an early stage and the joint treated as in a complete excision At the operation cultures are taken from the interior of the joint and a full bacteriological examination made from which specific autogenous vaccines are prepared and given at intervals of four or five days under the direction of my colleague Dr Kenneth Goadby, who will detail the bacteriology of the cases

It might be noted here that the bacteriological findings in these cases show the presence of not only pyogenic cocci and bacilli of the coli group but also bacillus perfringens of malignant œdema and *Hibler IX*. The operations in practically all the cases were done in the presence of active and virulent sepsis but by treatment with free drainage irrigation, and vaccines the sepsis was at once controlled There is usually a slight elevation of temperature for a few days after operation but it soon settles down and in only one case have I had to incise the limb after the operation for any spread of sepsis

Results

So far I have operated in an early stage upon six cases for excision of the shoulder joint, and on eight for excision of the elbow joint in cases of severe comminution of the articular surfaces associated with sepsis

Shoulder joint cases —One remains in hospital but it is doing well, of the remaining five, in one a sinus remained after 17 weeks due to the necrosis of some small fragments which were removed Of these five cases the ultimate result was good in two free movement of flexion and extension and abduction without scapular movement to an angle from 50° to 60° with the vertical being obtained. In two other cases the result was fair flexion and extension being good but abduction was limited to 40° with the vertical whilst in the remaining one there was evidence of circumflex nerve injury from the primary wound which persisted so that abduction was impossible owing to the paralysis of the deltoid and the patient refused further operative treatment to deal with the nerve lesion It is interesting to note that in cases of excision of the shoulder where extensive removal of the bone through the surgical neck was performed by subperiosteal resection subsequent radiographs demonstrated that there was considerable reformation of bone in the line of the shaft of the humerus towards the glenoid cavity

Elbow-joint cases —Here the ultimate results have been even more satisfactory Of the eight cases operated upon one is still in hospital from operation too recent to include as a result, of the remaining seven cases, one required further operation on the ninth day from spread of sepsis in the middle of the arm Of these seven, in four the ultimate result exceeded all my expectations, flexion and extension being possible to almost full extent and supination and pronation being possible, but not perfect, all show some degree of lateral mobility but that does not interfere with the usefulness of the limb and the muscular power in the arm and forearm is excellent In each of these four cases flexion of the elbow is so good that the patient can voluntarily touch the shoulder of the same side can fix a collar stud at the back of the neck, and can touch the angle of the scapula of the opposite side, extension is in each possible to almost a straight line. Each one could lift and raise a fairly heavy ward chair with the elbow flexed and unaided In two cases flexion and extension are possible in a smaller range, in one from 80° to 145°, and in the other from 80° to 120°, further movement being limited by masses of callus formed about the ends of the bone In the latter case the operation for excision was performed at a later period after free drainage had proved ineffectual to arrest the infective processes In the remaining case in which the upper fourth of the radius had to be removed owing to excessive shattering flexion and extension are possible in a range of 45°, but no movement of pronation or supination is allowed owing to the absolute fixation of the upper end of the radius to the ulna by a large mass of callus joining the two bones

In addition to the above I have excised two hip-joints for extensive fracture of the head and neck of the femur with septic infection in the joint One case did well, and the patient walks with a limb shortened by 1¼ inches, but with good movement at the hip The other case was doing well, but died suddenly on the thirteenth day from a profuse hæmorrhage from a chronic duodenal ulcer which opened the pancreatico-duodenal artery So far I have had no opportunity of excising a knee-joint in a recent case of gunshot injury, but in the light of other joint cases and with my experience of the difficulty of adequately draining a septic knee joint, I would not hesitate to do so, but in this instance with the distinct object of obtaining a firmly ankylosed joint

I am of opinion that the earlier the operation of excision is performed the better is the chance of obtaining free mobility In my cases the best results have followed operations performed soon after the injury Naturally a very great deal of the success of the operation depends upon the assiduity of the after treatment and the hearty coöperation of the patient in carrying out early movements and I would here like to express my sincere thanks to the various medical officers who have had charge of these cases and who have so faithfully carried out my instructions

Advantages of the Operation

1 All loose fragments of bone and the articular surfaces are removed having a clean sawn surface rather than jagged ends of bone

2 Very free drainage is established and the joint can be freely irrigated

3 The septic processes are at once controlled and pain is much diminished The chance of having to amputate for advancing sepsis is much lessened

4 The time of convalescence is very much diminished and there is much less risk of localised necrosis of bone and sinus formation

5 A movable joint is obtained with good muscular powers

Objections to the Operation

1 *Shock* —There is necessarily more shock in an excision of a joint than in making free incisions for drainage but actually the shock is very slight. The operation can be easily performed in half an hour bleeding is easily controlled and no large nerves are divided as in amputation I have seen no necessity of amputation having to follow in any case from failure to control the sepsis but should it become necessary the previous excision of the joint would probably increase the risk. There has been no instance of secondary hæmorrhage

2 The fact that *freshly sawn surfaces of bone are exposed to septic infection* might seem to be a disadvantage, but with

the free drainage, intermittent flushing of the cavity, and the use of vaccines the risk of septic osteomyelitis appears to be small

3 The risk of a *flail joint resulting* This is a possibility which cannot be overlooked, especially in the elbow I can only say that I have not seen it in my cases, and I have removed so much bone that three fingers could easily be placed between the sawn ends with the forearm extended, but I have seen one case in which the joint was flail after an excision of the elbow performed at a later stage

4 The excessive formation of callus around the divided ends of the bone may limit free movement In cases in which the comminution of bone is excessive, or where splinters or minute particles of bone are conveyed into the surrounding tissues, this formation seems to be more excessive and may limit free movement, but where movement is commenced early, and the patient steadily perseveres with it, good range of movement is obtained In some cases it is surprising that such good movement is obtained where large masses of ossified callus surround the ends of the bone

It may be justly urged on theoretical grounds that it is unjustifiable to remove so much bone in the presence of active and virulent sepsis, or that I am urging a procedure which contravenes ordinary surgical principles, but I can only point out the success that has attended these operations I am conscious that the number of cases is small, but I have not included those in which the operation has been performed when the wounds were healed and the joint fixed or those in which the operation was done at a later stage when necrosis of the end of the bone had commenced However, I feel most strongly that if in these cases of septic gunshot fractures involving the joint excision or partial excision were performed soon after the injury, we should be doing more for the wounded man in putting him into a better position to earn his future livelihood would materially shorten his convalescence, and thus save the State not only much of the expenses during hospital treatment, but also the amounts paid in pensions

I must thank Colonel R J S Simpson A.D M S Woolwich, for permission to make use of the cases forming the basis of this communication, and my colleague, Dr Martin Berry, for the excellent series of radiographs used in illustrating it

Shoulder joint Cases

CASE 1—Private B Wounded Dec 3rd, 1915 Bullet entered at back of left shoulder and passed out by a large wound in front Operation in France, anterior wound incised and shoulder joint opened Jan 3rd, 1916 Admitted to Woolwich Free discharge from anterior wound, great pain on any movement of shoulder Deltoid paralysed and circumflex anæsthesia Skiagraph showed much comminution of head and neck of humerus head of bone turned, so that articular surface faced outwards Jan 6th Operation Wound opened, upper end of humerus of dark grey colour and articular cartilage removed Periosteum separated and bone divided through surgical neck Area flushed with hot saline and wound lightly packed with gauze with large drainage tubes Arm fixed abducted with extension from elbow Jan 19th Wound granulating well Temperature normal since operation Arm fixed on Hey Groves crutch splint No pain in shoulder Jan 27th General condition much improved Feb 14th Wound healed Passive movements are free, but patient will not make any attempt towards active movement Deltoid paralysed March 20th Flexion and extension good No abduction Deltoid wasted June 1st Can flex and extend shoulder, but no abduction Circumflex paralysis remains Movements of elbow and hand good Skiagraph showed large deposition of bone in line of shaft occupying position of piece removed No necrosis or sequestrum seen

CASE 2—Private H Wounded Dec 12th, 1915 bullet entering at point of right shoulder and coming out in pectoral fold Feb 27th, 1916 Sinuses remain at each wound and dead bone easily felt by probe Free discharge of thick pus Skiagraph showed disorganisation of head of humerus, articular surface pointed upwards Rarefied area in neck, probably necrotic March 4th Operation Much disorganisation found in shoulder joint the head of humerus being blackened and soft necrotic area below it Tuberosities not involved Section made through anatomical neck and necrotic area thoroughly scraped Cavity flushed out Free drainage Arm fixed in abducted position March 24th Slight pyrexia for first week Wound closing rapidly Passive movements commenced April 20th Wound healed Moves shoulder a little July 13th Can flex and extend arm and abduct to 40° Deltoid acts well No rotation in shoulder, but movements are increasing

CASE 3—Corporal G Wounded Jan 24th, 1916, bullet passing through right shoulder Two operations in France where shoulder joint opened and drained March 17th Two healed wounds on outer aspect of shoulder and large open wounds both in front and behind, through which a drainage tube passes Great pain in any movement. No paralysis of arm Skiagraph showed extensive comminution of upper end of humerus, the head being completely separated from the shaft, the drainage tube passing in interval Upper end of shaft necrotic March 28th Operation Anterior opening enlarged and joint opened Head of humerus very necrosed and devoid of articular cartilage Upper end of shaft also necrosed Periosteum separated and shaft divided through surgical neck, 1½ inches being removed Granulations scraped away and bleeding arrested by hot saline Cavity irrigated with hydrogen peroxide, large drainage tube in posterior wound and small tubes for irrigation from front wound Light pack of gauze in wound April 2nd Very little discharge and granulations appearing April 17th Wound healthy, passive movements commenced May 10th Not much active movement in arm yet July 15th Very fair movement in shoulder, flexion and extension good but abduction limited to 40° Skiagraph showed a new formation of bone extending in line of shaft towards glenoid cavity

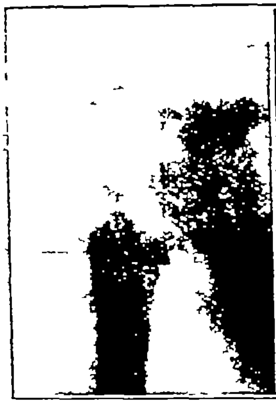
CASE 4—Private G P Wounded July 1st, bullet entering front of left shoulder 1½ inches outside tip of coracoid process and emerging at slightly lower level behind Admitted July 5th, when a radiograph showed fracture of the clavicle, of the acromion process, and of the anatomical neck of the humerus, the head of the latter being comminuted and displaced July 6th Wounds opened and free drainage established through joint July 27th Temperature raised for last three days and local swelling about shoulder Wound opened and head of humerus found blackened and necrosed Decided to excise head periosteum peeled back and muscular attachments to tuberosities detached Resection through upper part of surgical neck Joint cavity flushed with hydrogen peroxide and saline and freely drained by posterior incision Intermittent flushing with Dakin's solution Arm maintained abducted Sept 25th Wounds all healed Nov 12th Can voluntarily abduct arm to 45° from body, and on fixing scapula passive movement can be made to 80° before scapula rotates Flexion and extension of arm good. Skiagraph showed a fair growth of callus around upper end of shaft Glenoid irregularly thickened Jan 4th, 1917 Movements at shoulder are more free Can abduct easily to 60° without rotation of scapula Flexion and extension are more free Result excellent (See Figs 1 and 2)

CASE 5—Private H MacI Wounded July 1st, 1916 by rifle bullet entering in front of right shoulder just outside tip of coracoid process and emerging in posterior deltoid margin Admitted July 4th Anterior wound sloughing Thin, serous bubbly pus draining Great pain in shoulder No nerve injury Skiagraph showed very comminuted fracture of head of humerus Articular surface rotated July 6th Operation Incision in pectoro-deltoid interval, joint opened Head of humerus much comminuted Upper end of shaft black and necrotic Periosteum stripped off tuberosities and detached bone and upper end of shaft removed Area flushed with peroxide and hot saline and cavity lightly packed with gauze Large drainage-tube through posterior wound Arm put up fully abducted and arranged for frequent flushing July 9th Temperature about 100° F Wound clean and commencing granulation July 20th Wound excellent Very little discharge August 22nd Arm removed from splint and passive movements commenced in shoulder Wound almost healed Nov 11th Small sinus remained in incision and skiagraph showed small sequestra at upper divided end of humerus Can move shoulder surprisingly well Can abduct to 45° without movement of scapula Nov 13th Sequestra removed Jan 10th, 1917 Wound healed Movements of arm increased Can abduct to 60° and flex and extend well Can passively raise arm to almost vertical Result is very good (See Figs 3 4, and 5)

CASE 6—Corporal E Wounded July 29th, 1916, by shell fragment entering posterior aspect of left shoulder and emerging at tip of coracoid process Admitted August 3rd Patient sallow and sweating Temperature 98° F Pulse 112 Wounds foul and fine crepitation felt around anterior aspect of shoulder Skiagraph showed great comminution of head of humerus, which is separated from shaft Glenoid cavity and neck of scapula comminuted Fracture of coracoid process and spine of scapula Three fairly large metallic fragments present Operation (on admission) Wound freely opened and direct communication made from front to back through joint Bone very comminuted and very foul Smear preparations showed numerous spore forming bacilli Area swabbed with peroxide and tubes arranged for continuous

CASE 4

1



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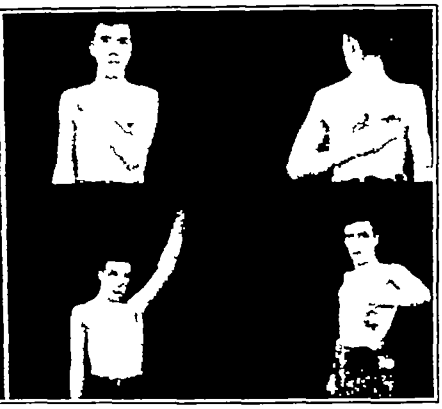


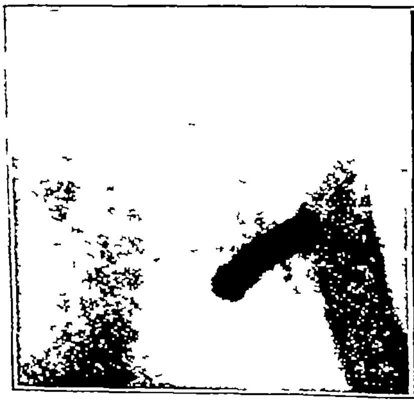
FIGS 1 and 2 (Case 4) —Fig 1 radiograph taken three and a half months after excision of shoulder shows the ossification of callus at the upper end of shaft of humerus Fig 2 shows the movements obtained note that the figure showing elevation of the arm is a passive movement the others active and voluntary

FIGS 3 4 and 5 (Case 5) —Fig 3 is a radiograph of the original injury to the head of the humerus with drainage-tube *in situ* (July 4th) Fig 4 radiograph four months after excision Fig 5 the movements obtained note that the elevation of the arm is a passive movement the others active movements

FIGS 6 7 and 8 (Case 6) —Fig 6 shows the injury to humerus scapula and clavicle five days after the receipt of wounds the central clear area being a gaseous collection in anaerobic infection Figs 7 and 8 are radiographs taken two months after excision showing the movement of the mass of callus with the humerus

CASE 5

3



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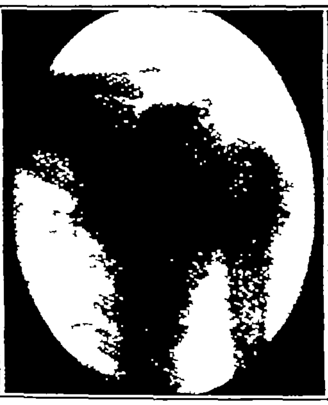

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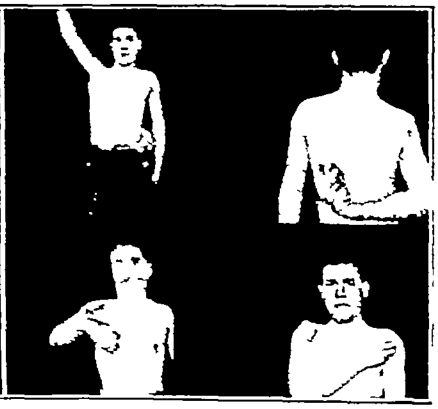

CASE 6

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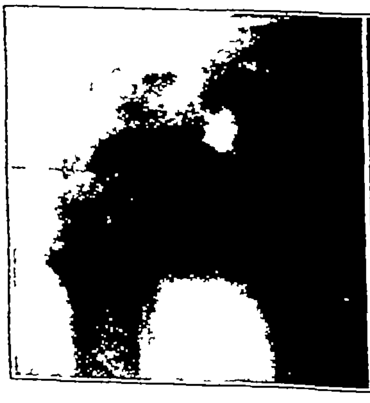

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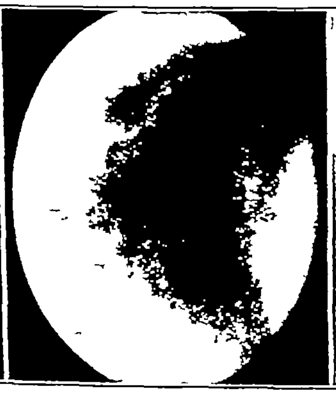

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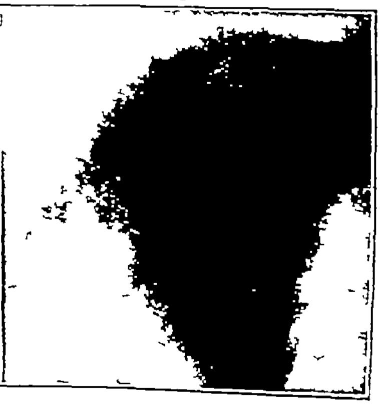


irrigation Saline infusion August 6th General condition good Temperature 98·6° F Pulse 96 Tongue clean August 14th Condition unsatisfactory Temperature up to 102° in evenings but tongue moist Drainage not so free August 15th Operation Wounds freely opened Bone found blackened and very foul Much comminution Purulent granulations in medullary cavity of shaft Latter sawn through surgical neck. Glenoid cavity only held by triceps attachment and was removed and many rough pieces of bone removed with forceps Area flushed with saline and hydrogen peroxide and freely drained Arranged for continuous irrigation and arm put up abducted August 21st Temperature normal since operation. August 30th Doing well Arm maintained abducted to 60° Sept 20th Anterior wound healing well Oct 20th Skiagraph showed a lot of callus around upper end of humerus which moves with shaft Sequestra present at glenoid and upper end of shaft Dec 30th Sinuses remain at each end of incision Jan 9th 1917 Sinuses opened and sequestra removed There is a small amount of mobility at shoulder, and deltoid muscle acts Patient remains under treatment (See Figs 6, 7, and 8)

Elbow-Joint Cases

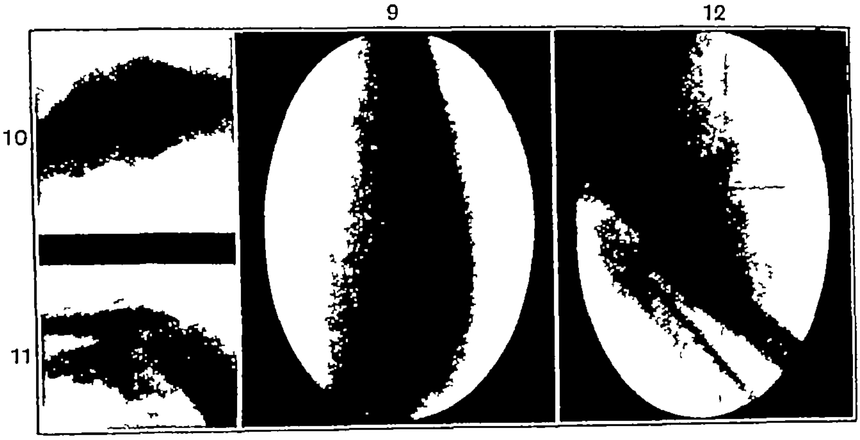
CASE A.—Private O Wounded May 28th, 1915, by shell explosion in close proximity, causing extensive wounds in right arm and about left elbow Was operated upon within two hours and right arm amputated immediately below shoulder joint Admitted June 5th Amputation stump very septic, wound extending into posterior axillary fold Also septic wound of upper left forearm over olecranon Skiagraph Complete shattering of upper 2 inches of both radius and ulna very comminuted No fracture of humerus Large metallic fragment 3 inches above joint June 8th General condition bad Pulse 120 Saline enemata Wound of forearm opened for drainage and fragment removed June 14th Operation Vertical median posterior incision and triceps

FIGS 9 10, 11 and 12 (Case A) — Fig 9 shows the great comminution of upper ends of radius and ulna, with fragments of bone driven into tissues in front of joint Figs 10 and 11 show antero posterior and lateral views of the joint six months after operation (Fig 11 is upside down) Fig 12 skiagraph after 18 months The large mass of callus in front of joint limited range of movement to 60°, but flexion was allowed to a right angle

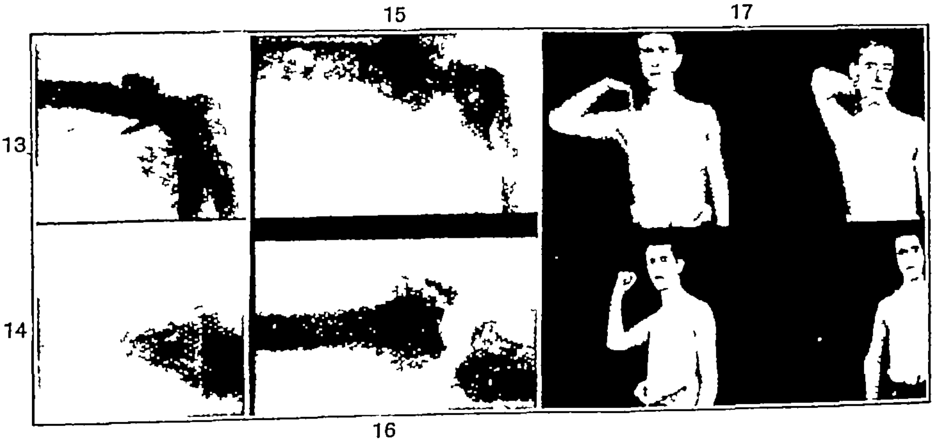
FIGS 13-17 (Case E) —Figs 13 and 14 are lateral and antero posterior radiographs taken four days after injury Figs 15 and 16 are taken ten weeks after excision of elbow note lateral formation of callus and slight internal displacement of forearm Fig 17 depicts the voluntary movement obtained

FIGS 18-22 (Case F) — Figs 18 and 19 show the fracture five days after injury; note the comminution of lower end of humerus Fig 20 six weeks after excision Figs 21 and 22, voluntary movement six weeks after excision these movements increased in range to those in Fig 17 (Case E) after a further interval of seven weeks

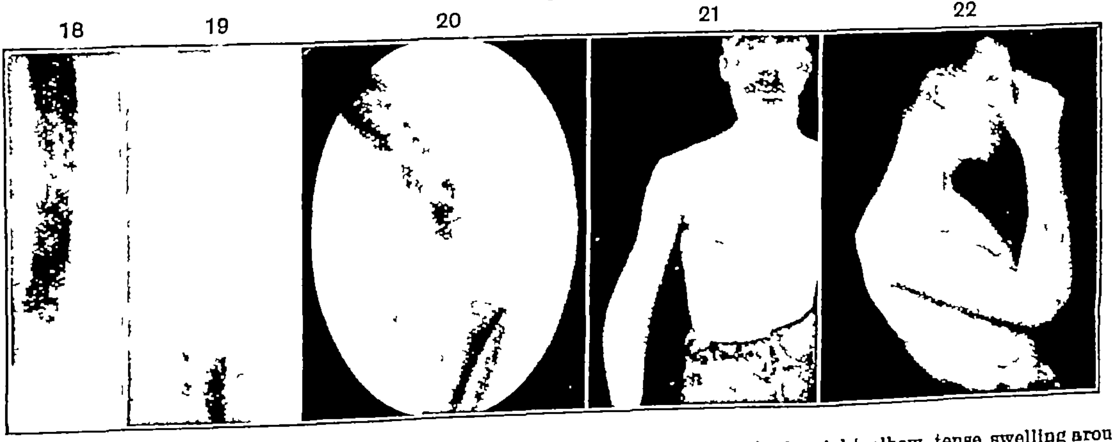
CASE A



CASE E



CASE F



tendon detached Detached fragments of bone removed and upper ends of radius and ulna sawn off just above the level of tubercle of radius Humerus not sawn off Area flushed with peroxide and cavity lightly packed No sutures in wound June 20th Wound clean and granulating July 2nd Passive movements commenced in elbow Can move fingers and hand well August 2nd Wound almost healed Only a small range of movements allowed without pain Jan 31st, 1916 Can move elbow through a range of 80° and has very good muscular power Can feed himself and touch back of occiput There is a firm prominence in front of elbow December Elbow had improved until he was again injured by bomb explosion Still has a range of movement of 60° and power is very good Skiagraph showed large formation of callus about upper end of radius and ulna which prevents full flexion at elbow (See Figs 9, 10, 11, and 12)

CASE B —Private E M Wounded Sept 25th, 1915 Wound in upper left forearm, involving median nerve, and also in inner aspect of right elbow joint Admitted Oct 14th, when there was great pain in right elbow, tense swelling around the joint, and a thick purulent discharge from the wounds Temperature 103 4°F Skiagraph showed shattering of lower end of right humerus No fracture of ulna or radius Oct 15th Operation Wounds of right elbow opened and found to pass directly into elbow joint, the inner part of which was destroyed Completely detached fragments of bone were removed, including the whole of inner condyle and supracondylar ridge and the trochlear surface of humerus Capitellar surface was intact Rough bone edges were rounded off and cavity flushed with hot saline and with peroxide Wound very lightly filled with gauze Arm put up on right-angle anterior splint The operation wound very quickly cleaned up and granulated Jan 1st, 1916 Wound healed and movements of elbow are good Jan 27th Can voluntarily move elbow from 80° to 160° The ulna has become slightly displaced inward as the result of the removal of the inner half of humeral articulation, but movement and muscular power are quite good

CASE C —Private M Wounded Sept 25th, 1915, in left forearm fracturing radius in upper third and also on inner aspect of right elbow joint Arrived Oct 15th From the wound of right elbow there was a profuse purulent discharge it was much swollen, extremely painful, and temperature 103° F Skiagraph showed an extensive comminution of lower end of humerus into elbow joint Radius and ulna were intact Oct 16th Operation Wounds opened and passed directly into elbow joint, the inner condyle of humerus was shattered All loose bone removed, including the whole of trochlear surface of humerus, internal condyle, and part of the internal supracondylar ridge The capitellar surface was left, together with the olecranon and head of the radius which were not fractured All rough edges of bone chipped away, cavity flushed with hot sterilised water and hydrogen peroxide Gauze lightly packed in and two small tubes passed in for intermittent flushing Oct 27th Elbow maintained flexed Wound clean and granulating Nov 23rd Wound nearly healed Passive movements in elbow good. Jan 1st, 1916 Wound of elbow healed Can flex voluntarily to 75° and extend to about 150° June 27th Movements of elbow from 70° to 150 Muscular power is very good Ulna is slightly displaced inward

CASE D —Sergeant S Wounded April 21st, 1916 shell fragment striking on tip of olecranon of right arm Operation in France, where large metal fragment and several pieces of bone removed On admission on May 1st there was a rounded opening over point of olecranon where bare fragments were exposed No exit wound Elbow very painful, and there was undue mobility forward of joint Temperature 99° F Skiagraph showed whole of olecranon comminuted into small fragments Fracture of lower end of humerus separating internal condyle and trochlear surface from rest of bone, extending into joint and displaced slightly forwards May 6th Operation Vertical posterior incision through triceps Many small fragments of olecranon removed and pus found in joint Base of olecranon sawn through Humeral fracture was in good position and so a complete excision was not performed Counter opening made on outer side and tubes arranged for continuous irrigation June 8th Temperature gradually settled down Very little movement allowed in elbow July 6th Has had a lot of pain in elbow and œdema around it Temperature 99–100° F July 8th Operation. Incision reopened and lower end of humerus found to be necrotic Further opening on inner side and joint irrigated July 20th Temperature 101° and much purulent discharge Operation Joint fully opened and cartilage found much eroded Complete excision removing humerus above intercondylar line base of olecranon and head of radius Light pack of gauze and small tubes for irrigation August 1st Doing well, wound clean Temperature normal August 30th Wound healed Can voluntarily flex elbow Sept 20th Can flex and extend from 80° to 120° Supination and pronation fair Oct 30th Much improved Can touch shoulder of same side Supination and pronation improved Muscular power good

CASE E —Private F Wounded July 1st, 1916 by bullet entering outer and anterior aspect of right arm 2½ inches above elbow and out over external condyle On admission, July 5th, both wounds were inflamed and surrounding tissues swollen Great pain in moving elbow Temperature 98 6° F Skiagraph showed fracture of lower end of humerus, extending into joint Much comminution especially of external condyle Radius and ulna intact Several small pieces of bone in tissues in front and behind joint July 9th Elbow very painful Temperature 99 6° Leucocyte count 13 500 July 11th Operation Median vertical incision and pieces of bone removed from triceps Joint freely opened and fracture found much more extensive than radiograph suggested, the whole of external condyle and capitellar surface and outer half of trochlear surface being completely detached comminuted and rotated outwards Section of humerus made ¾ inch above upper limit of olecranon fossa and olecranon removed at base leaving cartilage of coronoid process and head of radius intact owing to the extent of removal necessary in humerus Cavity flushed with hot water and upper part of incision and triceps sutured Free opening left below and tubes put in for intermittent flushing July 20th Spread of sepsis in arm Focus opened July 24th Temperature not raised since last operation Passive movements commenced. Wounds clean August 23rd Wound almost closed Voluntary movements increasing Sept 8th Wound healed Can flex elbow enough to feed himself and to light a cigarette. Sept 20th Can voluntarily flex to 80° and extend almost fully Supination and pronation very good December Can flex to 75° and extend almost to straight line Muscular power very good Excellent result (See Figs 13, 14 15 16, and 17)

CASE F —Private A. M Wounded July 29th 1916 bullet entering over tip of right olecranon and emerging at side of inner mid line of elbow joint On admission, August 3rd there was much ecchymosis of arm and forearm and swelling around the elbow joint Wounds small and clean Temperature 98 4° F Movements of elbow painful Skiagraph showed very extensive damage to lower end of humerus, both condyles being fractured from shaft into joint and separated by lower end of shaft Olecranon process also fractured August 6th Joint more swollen Temperature 99 8° Leucocyte count 15 000 August 7th Operation Posterior wound excised Vertical median posterior incision of joint opened Olecranon found fractured, together with a large triangular piece of upper shaft of ulna, which was removed Both humeral condyles detached and articular surface of humerus comminuted, the lower end of shaft impinging on ulna between the fractured condyles The muscular attachments were separated from condyles and later removed and lower end of humerus sawn off Olecranon and coronoid processes of ulna and head of radius removed Area well flushed with hot water and bleeding arrested Each end of wound sutured and large median opening left for irrigation tubes August 14th Temperature normal since operation Very little discharge Small drainage-tube only in cavity August 21st Wound granulating Passive movements begun Sept 12th Can voluntarily flex elbow to 90° Sept 29th Movements increasing, but muscular power poor Nov 20th Movements very much improved Can easily touch shoulder of same side, back of neck, and scapula of left side Can extend to practically straight line Can supinate but cannot completely pronate Some lateral movement in elbow Muscular power good An excellent result (See Figs 18, 19, 20, 21, and 22.)

CASE G —Private E A. Wounded Sept 10th, 1916, bullet passing through upper and outer part of right forearm just below elbow joint Admitted Sept 27th Wounds dirty and swelling about upper arm Great pain on any attempted movement of elbow No nerve injury Skiagraph showed a very comminuted fracture of head, neck, and upper shaft of radius Many small pieces of bone driven into surrounding tissues No fracture seen in ulna or humerus With such a comminution of radius and with sepsis in the elbow joint, I deemed it advisable to remove the upper end of radius and so ensure drainage and also to attempt to obtain mobility in the elbow Sept 29th Operation Vertical incision through posterior wound Radial head found loose and in small pieces, the articular ligament being destroyed Many completely separated pieces of bone were removed and the sharp upper end of shaft of radius cut off with forceps The elbow and superior radio-ulnar joints were fully exposed and flushed with hot saline and with hydrogen peroxide Area lightly packed with gauze with tubes for drainage Oct 20th Wounds granulating well Temperature normal Dec 14th Wounds healed Can voluntarily move elbow from 75° to 120° and this will probably further improve There is no movement of pronation or supination and a skiagraph shows a large mass of callus around the upper end of the radius, fixing it to ulna, which now shows a small linear fracture in same area Probably the excessive formation of callus is due to the great comminution of bone forced into the tissues by the "explosive" force at the original injury

CASE H —Lieutenant P P Wounded Sept 15th, 1916, by shell fragment on inner and posterior aspect of right elbow Has had five operations in France, but does not know what was done Admitted Nov 14th, when arm and forearm fixed in a straight Thomas splint, with extension There was a large granulating surface on inner and posterior aspect of right elbow and much loss of tissue Complete ulnar anæsthesia and paralysis Skiagraph showed internal condyle of humerus was missing and a fracture line through humeral articular surface separating trochlear from capitellar surface Olecranon was fractured at base and displaced, and there was much bone débris in tissues Nov 20th Temperature has been raised and more swelling around joint Wounds opened and articular surface found devoid of cartilage, roughened and eroded Counter openings made for free drainage Dec. 12th Skiagraph showed necrosis was extending Dec 15th Operation. Vertical median posterior incision Olecranon removed Humerus projected from wound and 1½ inches of lower end removed, but not up to limit of fracture-line on inner side Upper end of ulna and radius was necrosed, and so removed by saw through base of coronoid process and head of radius Bleeding arrested and area well flushed with hot water, and tubes arranged for intermittent flushing with Dakin's solution. There was 1¾ inches interval between sawn surfaces when forearm extended Dec 20th Temperature normal since operation Wound flushed very frequently with Dakin's solution, alternating was hypertonic saline Dec 27th Wound granulating rapidly Temperature normal Forearm fixed in different positions at daily dressing Jan 12th Granulations flush with surface and much smaller Can move elbow passively from 75° to 120° without pain March 1st Can voluntarily flex from 150° to 90° Remains under treatment

ON THE CULTIVATION OF THE MALARIAL PARASITE *IN VITRO* *

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IN the course of an investigation during the months of September and October, 1916, of cases of pyrexia admitted to a casualty clearing station as N Y D (not yet diagnosed) malaria, or jaundice, the usual methods of hæmoculture in bile salt media and citrated broth were supplemented, in addition to the examination of blood films for malaria, by the employment of a medium consisting of citrated normal saline containing varying strengths of glucose The object in view was the cultivation of the plasmodium in this medium At first the strengths of glucose used were 2 and 5 per cent, and later two other strengths, 7 5 and 10 per cent, were tried The strength of the sodium citrate in the medium was 1 5 per cent

The cultivation of the parasite was attempted in every instance of 100 cases of pyrexia, comprising enteric group infections, 20, N Y D, 49, and malaria, 31 In this first series a marked increase in the number of parasites in the culture tubes was noted in 9 of the 31 cases of malaria The present paper embodies the results obtained from 51 cases of clinical malaria examined by means of the following technique

Technique—Blood from a vein at the bend of the elbow was obtained either by direct puncture or by an all glass syringe with large bore needle About 1 to 2 c c of blood was inoculated into 10 c c of the glucose medium After thorough mixing the tubes were incubated at 40°C for 20 to 24 hours Both aerobic and anaerobic methods were employed Films were made from the uppermost layer of corpuscles, after the supernatant fluid had been pipetted off Stained by the Giemsa method and examined by oil immersion lens The control films of 51 cases showed —

Malignant malaria (ring forms and crescents or crescents only)	18
Benign tertian	12
Quartan	1
Malaria type undetermined	10
No malarial parasites	10

Culture

—	Increase of parasites			Totals	
	Marked	Not marked	Undetermined	Positive.	Negative
Malignant malaria	11	1	2	14	4
Benign tertian	0	0	1	1	12
Malaria ? type	4	0	3	7	3
Films negative	2	2	1	5	5
	17	3	7	27	24

Evidence of increase of parasites—Using this medium a diluted plasma with the addition of dextrose, the characteristic form which can be recognised as a plasmodium is what is termed here the "dot" form In size it is smaller than the fine ring, the nucleus staining as a bright-red dot and the protoplasm an intense blue, semilunar in shape The appearance suggests the merozoite Typical ring forms were infrequent Although the "dot" form appears free in many of the films, yet in fortunate films they are seen to be intracorpuscular, and it is probable that in the spreading of the films the fragile envelope of the incubated red corpuscle is damaged No comparative enumerations of parasites were attempted

Remarks—In 17 cases (all of which were undoubtedly malignant malaria) the terms "abundant," "very numerous," are employed to indicate the number of 'dot' forms present The mere words do not adequately convey to the mind the relative ease with which parasites are to be found in the films as compared with the original control film Of 18 cases of malignant malaria investigated only 4 gave a completely negative result in culture On the other hand, no increase of parasites could be demonstrated in 12 cases of benign tertian and in 1 of quartan infection Of 10 cases of malaria of undetermined type the culture was negative in 3 A reference to this point in connexion with diagnosis and the presence of quinine in the serum will be made later Of 10 cases, 9 of clinical malaria and 1 of jaundice, in which the control blood films after adequate examination were considered negative, "dot" forms were found in 5 In two instances they were abundant

Our statement that no parasites were found was the result of prolonged examination of blood films The whole question, however, of the number of parasites present in blood is dealt with in detail by Sir Ronald Ross in his text-book on the "Prevention of Malaria" (1911), but one sentence can be quoted from this work, as follows 'But for a broad general rule we may, I think, accept the principle (pending more exact researches) that if we cannot find the parasites after careful search their number is not usually sufficient to produce fever "

Interpretation of results—Two interpretations of this apparent increase of parasites seem possible (1) an actual increase in the number of parasites, and (2) an apparent increase due to a concentration effect To take the latter explanation As is well known, if citrated whole blood be centrifugalised or allowed to settle the leucocytes are found to occupy mainly the intermediate layer between the red blood cells and the supernatant fluid And yet it is in this intermediate layer that the malarial parasites are found To quote Bass[1] "The parasites live at the top of the column of the precipitated cells in a layer varying in thickness from one fiftieth to one twentieth of an inch All parasites beneath this layer die in from 2 to 20 hours, the time is dependent on factors which we have not determined" The same author has shown that the consistency of the protoplasm of the malarial plasmodium is less yielding than that of the red blood corpuscle. "Large æstivo-autumnal plasmodia are round or oval, the tertian variety are more or less flattened." Such differences in the physical characters of the infected red corpuscles may determine in part the zone the living plasmodium occupies—namely the intermediate layer It may be, therefore, that this technique is of value in concentrating in this layer the infected corpuscles

The alternative explanation is that an actual increase in the number of parasites has occurred—that is the parasites have multiplied If increase in the number of parasites indicates actual development then segmentation of a mature schizont must have taken place in the culture tube during the 20 to 24 hours' incubation As only merozoite forms were found in the cultures, and, moreover no further progress in the life cycle followed a further incubation it is manifest that this method allowed of the development for only a portion of the asexual cycle, in contradistinction to Bass's method, which permits of the cultivation of the parasite throughout one, or more than one generation In our experiments further incubation produced a gradual diminution in the number of parasites seen in the films It is admitted that the possibilities of this technique are confined to aiding clinical diagnosis

Blood incubated in citrated broth, but without the addition of dextrose, did not permit of the development of the 'dot" forms in the culture tubes The citrated plasma medium with dextrose may be said to permit of concentration of, and life of the plasmodium for a period of 24 hours or more, while with Bass's medium the patient's serum with dextrose permits of concentration plus life plus development of the plasmodium

Whether the true explanation of the results is an apparent or a real increase of parasites in the intermediate layer or both the evidence permits of no dogmatic opinion

Conditions of growth—The favourable conditions of growth are three —

1 The presence of dextrose in the medium, as already stated is essential Bass and Johns[1] in October 1912 published their discovery of this important factor Further they found that maltose alone of many carbohydrates tried —e g, saccharose lactose, galactose, dextrine, mannite—could replace dextrose[1]

The percentage of sugar in normal blood is about 0 1 per cent It has been shown by Maclean[3] that when normal blood is incubated for four hours at 37° C active glycolysis occurs owing to the action of the leucocytes Further Maclean has shown that normal blood is capable of glyco—

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* A paper read before the Salonika Medical Society on Feb 14th 1917

lysis whether or not sugar is added He gives "0 4 per cent or so" as about the maximum of sugar met with in diabetic blood, and records an experiment with normal blood to which glucose had been added, so that the total amount was 0 358 per cent, while after three hours' incubation at 37° C the glucose was estimated at 0 281 per cent This is a distinct reduction, but on the lines of our experiments with amounts such as 2 5 and 10 per cent of added glucose it indicates that much of the added glucose is unaffected Accordingly, in our experiments dextrose was added to the medium in quantities sufficient to obviate this diminution in dextrose content by the leucocytes Strengths of dextrose varying from 2 per cent to 10 per cent were tried and the best results obtained in the 5 and 7 5 per cent solution At variance with this conclusion is the recommendation of Bass, as to the strength of dextrose, in his second publication Bass using undiluted human serum as the culture medium added dextrose in such quantity that the final mixture contained 0 5 per cent dextrose The successful results obtained by Bass and Johns have been confirmed

2 Bass in his original paper emphasised the importance of strict *anaerobiosis*, but in the second publication the technique recommended does not necessitate anaerobic cultivation Whether the employment of glucose in the medium secures anaerobiosis or no certain it is that, using both anaerobic and aerobic methods, we achieved precisely the same results The red corpuscles by reason of their avidity for oxygen seem to remove the oxygen from the fluid medium and so contribute to the maintenance of an anaerobic state

3 The optimum *temperature* is given as 40° C Bass noted the segmentation of æstivo-autumnal parasites from the smallest rings in about 30 hours at 40° C, and that the parasite will develop but more slowly, at any temperature between 37° and 40° C In this series all cultures were incubated at 40° C

Attempts to cultivate the benign tertian parasite, as already noted, have with this technique so far met with no success How different is the case of the malignant parasite which can live and develop partially in an unfavourable culture medium! Now, as Bass has grown the three malarial parasites, a comparison of the two methods, based as yet on a small number of cases, is fitting

The literature of this subject which was not even available at the outset of these investigations, is limited to two papers Bass and Johns[1] have recorded that they successfully cultivated the æstivo autumnal parasite from each of 29 different patients and the benign tertian parasite six times One case of quartan was tested, but the parasites failed to grow The lack of success was ascribed to certain errors of technique "It is to be remembered that one of us (Bass[3]) obtained growth of the quartan parasite in his earlier work."

Thomson and McLellan,[4] employing Bass's method but incubating at the lower temperature of 38° C, were able to cultivate the malignant parasite from two patients The development of the plasmodium through one generation was followed Sir Ronald Ross was convinced, after examining the preparations of Bass and Thomson and McLellan, that the evidence of the successful cultivation of plasmodium falciparum up to the sporulating forms was indisputable

Bass's original technique —One tenth of a cubic centimetre of a 50 per cent dextrose solution (Merck's) for each 10 cubic centimetres of blood to be taken is placed in the defibrinating tube before the blood is drawn Defibrination is effected by gently stirring or whipping with the rod which extends through the wool plug The whipping in of air, causing bubbles, must be avoided The defibrinated dextrose blood, sufficient in amount to ensure of a depth of serum one half to one inch above the red cells when the latter have settled, is transferred to two culture tubes and incubated at 40° C The parasites may be examined at any interval by drawing a small quantity of cells from the intermediate layer by means of a capillary tube Fine capillary tubes should not be used as the infected red cells may be damaged Great care must be taken in handling tubes to keep them in the upright position To defibrinate the blood we used a bundle of stiff wire twigs attached to a glass rod extending through the wool plug

Remarks —The material at our disposal during the last six weeks has been principally the benign tertian parasite Nine cases have been examined by Bass's method, four of which have given a completely negative result These latter cases had received doses of quinine in liquid form of 20, 40, 20, 20 grains respectively In two instances the control film at the time of hæmoculture was negative The five patients from whom positive cultures were obtained had received respectively the following amounts of quinine—0, 0, 5, 15, 10 grains The parasite developed typically for 16, 45, 18, 17, 12 hours Increase in the number of parasites, as judged by a comparison of the control film with the culture film, was noted in three instances In the remaining two positive results the parasites were plentiful Development up to segmentation was seen in two cultures

Employing the citrated plasma medium, negative results were obtained in six cases of benign tertian infection One case of quartan malaria continued its development up to the formation of merozoites Increase of parasites was noted Three other negative results were recorded In two the control films showed a few crescents but no ring forms In the third case there were a few fine ring forms This patient had been given 40 grains of quinine during the preceding 24 hours The remaining positive result is of interest The patient had been taking 10 grains of quinine daily in tabloid form since leaving hospital in September, 1916 The control film showed scanty fine ring parasites with nucleus and vacuole but no crescents Development was followed for 38 hours with the appearance of the malignant parasite in culture The number of parasites was much increased and there was a tendency, as noted by others for the parasites to collect in groups In the citrated plasma medium numerous "dot" forms were found at 24 hours Fine ring forms were also seen

The influence of quinine in culture —It seems certain that the presence of quinine in the serum used in the culture medium influences the development of the plasmodium, the benign tertian parasite especially, *in vitro*

In the living body a marked diminution in the number of benign tertian parasites from the peripheral blood within 12 to 24 hours of the giving of quinine in doses of 15 to 20 grains is observed commonly Quinine given in fluid form by the mouth can be demonstrated in the urine after half an hour's interval, and by the end of 48 hours the greater part has been excreted chiefly by the urine and to a less extent by the sweat and bile Clearly, then, the actual serum used for the culture medium will, if the drug has been administered recently, contain a certain amount of quinine

The exact manner in which quinine exerts its destructive influence is still largely a matter of speculation Thomson and McLellan[4] noted incomplete segmentation of the æstivo autumnal parasite obtained from a patient who had been taking 5 grains habitually A parasite of the same species recovered from another patient who had not taken quinine grew abundantly Bass does not mention the influence of quinine in his cultures

Summary

The material embodied in the first portion of this paper, based on 51 cases, is probably large enough to admit of certain statements Cases of clinical malaria in which the blood films were negative have been confirmed by cultural methods Of 10 patients whose control blood films after careful examination were considered as negative, "dot" forms were found in five cultures The two tertian parasites behave differently in culture. Of 19 cases of malignant malaria, 4 only gave completely negative results in the citrate plasma medium, while 17 cases of the benign tertian parasite failed to grow under the same conditions As a corollary of this where film examinations are inconclusive as to the type of parasite, a positive culture in this medium points to malignant infection The employment of this medium as a routine in hæmoculture may prove to be of value in assisting and confirming a clinical diagnosis

If with improvement of technique on the lines of Bass's method the cultivation of all three varieties of the malarial parasite can be made certain and permit of exact study, a step will have been made towards solving some of the many problems of malaria awaiting solution

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TETANUS AND ITS ANTITOXIN

WITH AN ILLUSTRATIVE CASE

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WHEN the medical history of the present war comes to be written one of its most interesting features will undoubtedly be that section relating to the incidence of tetanus amongst the wounded from the various fronts, and recording the success which has attended its preventive and curative treatment

From a comparatively early stage of hostilities in France antitetanic serum has been in use throughout the British Expeditionary Force for all wounds likely to have become contaminated, subcutaneous or intramuscular injections being given as early as possible and repeated as circumstances seemed to indicate How far this measure is to be regarded as having contributed to the saving of life and suffering will be definitely ascertained when full statistics have been tabulated That a large amount of success is to be attributed to this *prophylactic* measure is already admitted by all who have had the opportunity of studying cases of the disease brought from the seat of war to the military hospitals in this country To what extent tetanus antitoxin is to be recommended as a *curative* agent is a question which will also, doubtless, be largely elucidated by the teachings of the present war

The following case, which resulted in recovery, is typical of many met with in the home hospitals during the war, and also presents some interesting pathological features

On July 1st, 1916, in the attack on Montauban Lance Corporal —— was wounded on the right shoulder by two fragments of shrapnel No dressing till next morning, when a piece of metal and piece of khaki were removed from the larger wound Antitetanic injection given and a second injection next day at Boulogne

On July 10th, on admission to Milton Hill Hospital, Berkshire, the patient appeared in good health Examination of shoulder showed two unhealthy looking wounds on posterior aspect The upper and larger one, just behind and below the acromion, was a superficial granulating area about an inch across The lower wound, over posterior fold of axilla penetrated deeper, X rays disclosed a piece of metal embedded in muscles at bottom of wound Both wounds were decidedly septic and were treated by hot fomentations and rest to the arm After 10 days the wounds showed little disposition to heal

On July 23rd patient complained of some stiffness in the shoulder Next day the whole arm from shoulder to wrist was in a state of tonic rigidity, and acutely flexed at elbow, no actual pain when arm was kept at rest, no painful spasms as yet, uneasiness in throat and right side of neck, and difficulty in swallowing food, pulse and temperature normal In the afternoon Sir William Osler saw him and made the following note No fever, patient complains a little of pain in the epigastrium and back and right shoulder The arm is flexed at the elbow muscles stand out prominently and feel rigid Patient can flex and extend the fingers, but cannot extend the arm, forcible extension does not hurt him Pectoral muscles are not involved, deltoid feels stiff Patient cannot lift his head off the pillow He has occasional spasms of back and neck and arm with great pain He opens his mouth fairly well

By evening the paroxysms had increased in frequency and severity, as also in area involved The muscles of whole right side of body except those of the leg were in a state of tense rigidity the abdominal wall was retracted and hard as a board, the left side of the body, except the left side of the abdominal wall, was unaffected Jaw clenched, head turned to right side Painful paroxysms, affecting only the right side, were brought on by any attempt at movement

By lumbar puncture 6 drachms of cerebro spinal fluid[1] were drawn off and 2000 U S A. units of tetanus antitoxin injected into spinal canal, 2000 units also given intramuscularly, chloretone gr xxx. per rectum

July 25th - Patient slept at intervals during the night, but when awake suffered much from sickness and pain in head and legs, very profuse perspiration Although the arm and right side of body generally remained rigid, the tetanic spasms did not increase in severity during the night Another injection of chloretone gr xxx., per rectum and antitoxin, 2000 units, intramuscularly

On July 27th rigidity of right side and flexure of arm remained the same, the muscles of back of neck and posterior fold of axilla being specially hard, abdominal wall tensely contracted and very tender to touch The jaw could be opened but very slightly, "risus" well marked The arm could be forcibly extended to a considerable extent without pain, but on relaxing it it returned to its flexed position, and this was immediately followed by a painful spasm involving the whole right side Even the leg was then thrust out as in cramp, but the foot appeared unaffected Patient complained of sore throat and severe pain in epigastrium Retention of urine had been experienced, but catheter not required Antitoxin 2000 units intramuscularly Chloretone gr xxx. per rectum

On July 29th rigidity the same, several spasms noted during the night, confined chiefly to right upper quadrant of body Jaw immovably fixed, feeding difficult Only liquids could be taken, and the act of swallowing was very painful Masses of tough dark phlegm formed in the throat were got rid of with extreme difficulty Nutrient enemata commenced Patient still lay with head turned to right side, mouth also drawn a little to the right, and eyes sometimes involuntarily rolled to that side, tongue bitten during sleep

On July 31st the general condition was much the same A notable feature was that the hand and fingers had been quite freely movable all along Neither were they affected during the paroxysms of spasm

On August 1st, except that abdominal muscles were still very hard and tender the rigidity of the right side appeared to be relaxing The head could be moved a little from side to side but could not be raised Teeth firmly clenched but separated a little during sleep Painful spasms were still excited on small provocation

On August 5th the general rigidity of the arm and forearm, and the tendency to attacks of spasm, were gradually becoming less pronounced The jaws could be opened about half an inch, but the idea of solid food was dreaded The patient was seen by Sir David Ferrier, who observed

There is slight transitory ankle clonus in the right foot, no Babinski reaction, knee jerk slightly exaggerated The movements of the proximal muscles of the right limbs are involved in spasm, whilst the distal muscles (hand and foot muscles) are not affected The abdominal muscles are very rigid There is a certain amount of spasm of the thoracic muscles, but the expansion of the chest is found on measurement to be about normal The platysma, trapezius, and sternomastoid on right side are only slightly rigid The deltoid and biceps are very hard The arm is firmly flexed at the elbow It lies across the chest and cannot be voluntarily moved Forced extension immediately produces spasm '

On August 6th there was severe abdominal pain, mostly on left side On the 7th this pain extended down left leg which was much swollen from the knee downwards The internal saphenous vein was hard and very tender An attack of acute phlebitis, depending on a thrombus, probably of the iliac vein, had thus supervened For several days the swelling of the leg increased, and extended upwards to the groin, being accompanied by much pain, but only slight rise of temperature In a week the swelling began to subside, and in another week the phlebitis had practically gone, slight swelling and discoloration of the leg persisted, however, for several weeks

On August 13th, except for the muscles of right arm and forearm, which were still rigid, preventing full extension, the muscles of the right side were no longer in spasm They felt abnormally soft and flabby Patient was beginning to take solid food, but had a sensation as if his tongue were tied Painful spasms were still excited in the arm on attempts forcibly to extend it

From this time steady progress was made, but in spite of abundant nourishment and exercise the patient's whole muscular system was for months deficient in tone He was easily fatigued, and complained of pains in the calves of the legs, and aching in the muscles generally, after even slight exertion For a long time the arm movement was very imperfect, and the elbow could not be voluntarily, or even by force, brought into a straight position, or raised above the head There remained a good deal of tenderness on pressure over the shoulder joint and along the line of the cervical plexus

With regard to the prophylactic effect of tetanus antitoxin it is rational to conclude that it will vary according to the amount of toxic material introduced into a wound, as well as to the dose of antitoxin given It is also a well established fact that the effect will be largely influenced by the route of administration the intrathecal route having been found by far the most efficacious Thus the result of an injection of the serum may be (*a*) Complete neutralisation of the poison and non appearance of the disease,
of the period of incubation and late appear-
(delayed tetanus), (*c*) limitation of the

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[1] Cerebro-spinal fluid examined was found to contain a faint trace of albumin no sugar no cells no deposit.

area affected by the disease (localised tetanus), (*d*) diminished severity in the manifestations of the disease (modified tetanus)

Clinical and also experimental evidence support the contention that each and all of these results have been attained During the later periods of the war, when prophylactic treatment has been almost universally resorted to amongst the wounded in the Western front, the fall in the incidence of tetanus has been very remarkable There is also evidence to show that wounds, in the discharges of which bacilli resembling *B tetani* were found, and which were subsequently treated by antitetanic serum, have not been followed by tetanus

The proportion of cases of tetanus with long incubation stage has largely increased since this mode of prophylactic treatment has become general The comparative increase in the number of cases of limited or localised tetanus is abundantly shown by more recent reports That the severity of the disease has been greatly mitigated by the prophylactic use of antitoxin is clearly shown by the marked decline in the mortality of the disease during recent years, both in this country and in America.

From considerations such as these the conclusion seems warrantable that the preventive treatment of tetanus by means of its antitoxin is a sound and beneficent measure which ought to be followed up to the fullest limits which experience dictates to be safe

The curative treatment of tetanus by this same agent stands on a somewhat different footing, but the increasing number of recoveries recorded in cases where it has been energetically employed encourages the hope that here also we possess a remedy of unquestionable value. I can recall a case which I treated some four years ago by the combined intrathecal and intramuscular injection of antitoxin This was a severe and rapidly developing form of the disease, exhibiting general tetanic convulsions with opisthotonos No prophylactic had been employed in this case, yet, contrary to my expectation, recovery took place In the case of Lance-Corporal ——, above recorded, the disease had secured a firm hold, and was rapidly increasing in severity up to the time of the first intrathecal injection From that time the virulence of the attack appeared to be arrested, and no extension of the area involved was afterwards noted The frequency of the paroxysms also seemed to be diminished in consequence of the treatment

Referring further to the lance-corporal's case there are one or two points of pathological interest The unhealthy appearance of the wounds on patient's admission ten days after their infliction and their resistance to careful treatment for a fortnight longer suggested the presence in the tissues of something more than the mere fragment of metal I have in several cases noted this unaccountable delay in healing in wounds subsequently followed by tetanus It may be that tetanus spores lodged in a wound have the effect of maintaining an unhealthy septic condition, and this delay in healing, in the absence of any other obvious cause, may put the surgeon on his guard as to the possibility of impending tetanus in any case which obstinately resists ordinary methods of treatment It may even lead to a diligent search being made in the discharges for the spores or bacilli of tetanus. A very notable circumstance in this case was the rapid improvement in the wounds which set in immediately after the first injection of antitoxin The discharge ceased within two days and the wounds rapidly cicatrised.

The localisation and limitation of the disease in the above case also deserve attention From beginning to end the attack may be described as strictly *unilateral* At no period was any portion of the left side involved in spasm, with the exception of the abdominal wall and other parts where the muscles of the two sides act in association. Even in these the contractions were more marked on the right side The anatomical continuity of the muscles of the two sides of the abdomen would account for the apparent spasm of the whole abdominal wall. It was also observed that throughout the attack the right hand and foot were entirely unaffected by spasm, voluntary movement and sensibility also being normal in both

These observations are corroborative of the theories (*a*) that the morbid condition in tetanus is primarily confined to the nerves spinal cord and subcortical centres in direct connexion with the seat of infection but that it may subsequently, in consequence of the intensity of the infection or in the absence of any counteracting influence, such as antitoxin, extend to the nerve centres generally, and thence involve the entire muscular system, and (*b*) that the channel of transmission of the tetanus toxin is principally the nerves leading from the point of infection, and not the blood current or the general lymphatic system.

With reference to the rigid condition of the arm and shoulder after the tetanic symptoms had passed off, the question arises, Was the stiffening, which persisted for many weeks, a result of (*a*) a fibrosis of the muscles mainly involved in the prolonged spasm, or (*b*) a periarthritis due to continued irritation of the metal which still was in close relation to the shoulder-joint, or (*c*) a nerve implication due to proximity of the metal to the sheaths of the brachial plexus? Probably all of these conditions participated in preventing for a long period the restoration of the arm to its full measure of utility

In contemplating the removal of the piece of metal still *in situ* it will have to be borne in mind that such an operation is fraught with considerable risk of re-exciting the disease, and that special precautions, including a preliminary injection of tetanus antitoxin, will have to be observed.

Yet another remarkable feature of the case was the occurrence of thrombosis with phlebitis of the iliac and femoral veins as a sequel to the tetanus attack I can find no record that this association has ever hitherto been observed.

A CONTRIBUTION TO THE STUDY OF DYSENTERY

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LATE BIOLOGIST TO THE BRITISH ANTARCTIC EXPEDITION, 1910

(*An Interim Report to the Medical Research Committee from the Laboratory, Mont Dore Military Hospital, Bournemouth*)

Early in October, 1916, it was ascertained by one of us (D G L) that carriers of *Entamœba histolytica* cysts were to be found among the dysentery convalescents invalided from France and Flanders It was therefore decided to search each convoy arriving from France for amœbic carriers as thoroughly as time allowed. Between Nov 3rd, 1916, and Jan 4th 1917, 159 dysentery convalescents were admitted to the hospital direct from France The incidence of carriers of *Entamœba histolytica* cysts among these 159 cases is indicated in Table I

Table I

Number of cases admitted.			Number of amœbic carriers discovered.		
British	Australian.	Other Colonial troops	British	Australian	Other Colonial troops
134	21	4	13	5	0

So that nearly 10 per cent. of the British cases and 24 per cent of the Australian cases were carrying *Entamœba histolytica* cysts

Now examination of the blood of these amœbic carriers revealed the fact that in 7 out of the 18 cases the blood serum agglutinated the *B dysenteriæ* Flexner or the *B dysenteriæ* Shiga in a dilution sufficiently high to warrant the diagnosis of a recent infection by one or other of these bacilli.[1]

This coincident finding of *Entamœba histolytica* cysts in the stools and specific agglutinating substances in the blood seemed sufficiently suggestive to warrant further observations

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[1] The agglutination test was carried out by Dreyer's method with Standard Cultures prepared in the Department of Pathology University of Oxford on behalf of the Medical Research Committee In this report the test will merely be referred to as being positive or negative for the test and its diagnostic value will be fully dealt with in a separate report

TETANUS AND ITS ANTITOXIN

WITH AN ILLUSTRATIVE CASE

BY WILLIAM TURNER, M V O, M D EDIN,
MILTON HILL MILITARY HOSPITAL (GENERAL HOSPITAL NO 3 SOUTHERN COMMAND) BERKSHIRE.

WHEN the medical history of the present war comes to be written one of its most interesting features will undoubtedly be that section relating to the incidence of tetanus amongst the wounded from the various fronts, and recording the success which has attended its preventive and curative treatment

From a comparatively early stage of hostilities in France antitetanic serum has been in use throughout the British Expeditionary Force for all wounds likely to *have* become contaminated, subcutaneous or intramuscular injections being given as early as possible and repeated as circum stances seemed to indicate How far this measure is to be regarded as having contributed to the saving of life and suffering will be definitely ascertained when full statistics have been tabulated That a large amount of success is to be attributed to this *prophylactic* measure is already admitted by all who have had the opportunity of studying cases of the disease brought from the seat of war to the military hospitals in this country To what extent tetanus antitoxin is to be *recommended as a curative agent is a* question which will also doubtless, be largely elucidated by the teachings of the present war

The following case, which resulted in recovery, is typical of many met with in the home hospitals during the war, and also presents some interesting pathological features

On July 1st, 1916, in the *attack on Montauban, Lance* Corporal —— was wounded on the right shoulder by two fragments of shrapnel No dressing till next morning, when a piece of metal and piece of khaki were removed from the larger wound Antitetanic injection given and a second injection next day at Boulogne

On July 10th, on admission to Milton Hill Hospital, Berk shire, the patient appeared in good health Examination of shoulder showed two unhealthy looking wounds on posterior aspect The upper and larger one, just behind and below the acromion, was a superficial granulating area *about* an inch across The lower wound, over posterior fold of axilla penetrated deeper, X rays disclosed a piece of metal embedded in muscles at bottom of wound Both wounds were decidedly septic and were treated by hot fomentations and rest to the arm After 10 days the wounds showed little disposition to heal

On July 23rd patient complained of some stiffness in the shoulder Next day the whole arm from shoulder to wrist was in a state of tonic rigidity, and acutely flexed at elbow, no actual pain when arm was kept at rest, no painful spasms as yet, uneasiness in throat and right side of neck, and difficulty in swallowing food, pulse and temperature normal In the afternoon Sir William Osler saw him and made the following note No fever, patient complains a *little of pain in the epigastrium* and back and right shoulder The arm is flexed at the elbow, muscles stand out prominently and feel rigid Patient can flex and extend the fingers, but cannot extend the arm, forcible extension does not hurt him Pectoral muscles are not involved, *deltoid feels stiff* Patient cannot lift his head off the pillow He has occasional spasms of back and neck and arm with great pain He opens his mouth fairly well '

By evening the paroxysms had increased in frequency and severity, as also in area involved The muscles *of* whole right side of body except those of the leg were in a state of tense rigidity the abdominal wall was retracted and hard as a board, the left side of the body, except the left side of the abdominal wall, was unaffected Jaw clenched, head turned to right side Painful paroxysms, affecting *only the* right side, were brought on by any attempt at movement

By lumbar puncture 6 drachms of cerebro spinal fluid[1] were drawn off and 2000 U S A. *units of tetanus* antitoxin injected into spinal canal, 2000 units also given intra muscularly, chloretone gr xxx per rectum

July 25th Patient slept at intervals during the night, but when awake suffered much from sickness and pain in head and legs, *very profuse perspiration* Although the arm and right side of body generally remained rigid, the tetanic spasms did not increase in severity during the night Another injection of chloretone, gr xxx., per rectum and antitoxin, 2000 units, intramuscularly

On July 27th rigidity of right side and *flexure of* arm remained the same, the muscles of back of neck and posterior fold of axilla being specially hard, abdominal wall *tensely contracted and very tender to touch* The jaw could be opened but very slightly, "risus" well marked. The arm could be forcibly extended to a considerable extent without pain, but on relaxing it it returned to its flexed position, and this was immediately followed by a painful spasm involving the whole right side Even the leg was then thrust out as in cramp, but the foot appeared unaffected Patient complained of sore throat and severe *pain in* epi gastrium Retention of urine had been experienced, but catheter not required Antitoxin 2000 units intramuscularly *Chloretone gr* xxx per rectum

On July 29th rigidity the same, several spasms noted during the night, confined chiefly to right upper quadrant of body Jaw immovably fixed, feeding difficult Only liquids could be taken, and the act of swallowing was very painful Masses of tough dark phlegm formed in the throat were got rid of with extreme difficulty Nutrient enemata commenced Patient still lay with head turned to right side, mouth also drawn a little to the right, and eyes sometimes involuntarily rolled to that side, tongue bitten during sleep

On July 31st the general condition was much the same A notable feature was that the hand and fingers had been quite freely movable all along Neither were they affected during the paroxysms of spasm

On August 1st, except that abdominal muscles were still very *hard* and tender, the rigidity of the right side appeared to be relaxing The head could be moved a little from side to side but could not be raised Teeth firmly clenched but separated a little during sleep Painful spasms were still excited on small provocation

On August 5th the general rigidity of the arm and forearm, and the tendency to attacks of spasm, were gradually becoming less pronounced The jaws could be opened about half an inch, but the idea of solid food was dreaded The patient was seen by Sir David Ferrier, who observed

There is slight transitory ankle clonus in the right foot, no Babinski reaction, knee jerk slightly exaggerated The movements of the proximal muscles of the right limbs are involved in spasm, whilst the distal muscles (hand and foot muscles) are not affected The abdominal muscles are very *rigid There is a certain amount of spasm of the thoracic* muscles, but the expansion of the chest is found on measure ment to be about normal The platysma trapezius, and sternomastoid on right side are only slightly rigid The deltoid and biceps are very hard The arm is firmly flexed *at the elbow It lies across the chest and cannot be* voluntarily moved Forced extension immediately produces spasm "

On August 6th there was severe abdominal pain, mostly on left side On the 7th this pain extended down left leg which was much swollen from the knee downwards The internal saphenous vein was hard and very tender An attack of acute phlebitis, depending on a thrombus, probably of the iliac vein, had thus supervened For several days the swelling of the leg increased, and extended upwards to the groin, being accompanied by much pain, but only slight rise of temperature In a week the swelling began to subside, and in another week the phlebitis had practically gone, *slight* swelling and *discoloration of the leg persisted*, however, for several weeks

On August 13th, except for the muscles of right arm and forearm, which were still rigid, preventing full extension, the muscles of the right side were no longer in spasm They *felt abnormally soft and flabby* Patient was beginning to take solid food, but had a sensation as if his tongue were tied Painful spasms were still excited in the arm on attempts forcibly to extend it

From this time steady progress was made, but in spite of *abundant nourishment and* exercise the patient's whole muscular system was for months deficient in tone He was easily fatigued, and complained of pains in the calves of the legs, and aching in the muscles generally, after even slight exertion For a long time the arm movement was very imperfect, and the elbow could not be voluntarily, or even by force, brought into a straight position, or raised above the head There remained a good deal of tenderness on pressure over the shoulder joint and along the line of the cervical plexus

With *regard* to the prophylactic effect of tetanus anti toxin it is rational to conclude that it will vary according to the amount of toxic material introduced into a wound, as well as to the dose of antitoxin given It is also a well established fact that the effect will be largely influenced by the route of administration the intrathecal route having been found by far the most efficacious Thus the result of an injection of the serum may be (*a*) Complete neutralisa tion of the poison and non appearance of the disease, (*b*) extension of the period of incubation and late appear ance of the disease (delayed tetanus), (*c*) limitation of the active and passive flexion, and the patella was freely movable On testing for abnormal mobility a slight "give" was experienced in both lateral directions A calliper splint was provided and worn for six weeks Seven months from the time of the injury the man began light work His present condition (11 months after the accident) is as follows The knee joint is painless, and shows a range of 20 degrees of flexion, there is definite abnormal lateral mobility of the tibia on the femur this can be elicited by firm manipulation, but is not evident to the man during ordinary use of the limb The man is now working at his old employment as a labourer and is carrying out full duties with the exception of climbing ladders

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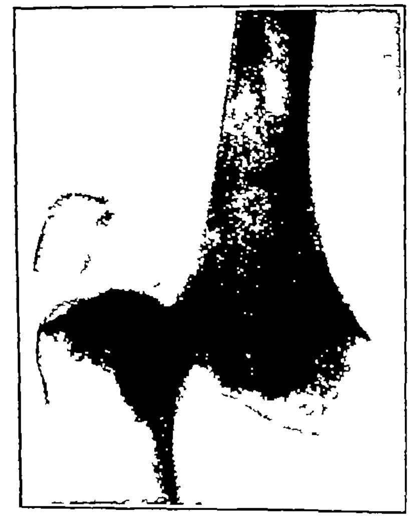
[1] Cerebro-spinal fluid examined was found to contain a faint trace of albumin no sugar no cells, no deposit

FIG 2



J E dislocation of knee joint Backward and outward displacement of femur

In the two cases described above, as in all complete dislocations of the knee joint, total rupture of both crucial ligaments with extensive tearing of the capsule, must have occurred Under conservative treatment, prolonged over a sufficient period there is every chance of spontaneous repair of these torn structures This fact has been repeatedly emphasised by Robert Jones who has seen some extraordinarily good functional results in this type of injury, when continued fixation has been employed In several of the cases described by this author considerable degrees of motion have been preserved, enabling the individuals to return to full work involving kneeling or to indulge in active sports The results in my two cases have fallen short of this ideal

In the case of the young woman I am inclined to regard the period of fixation as too long, as she had gone home to the Midlands there was great delay and trouble in having her readmitted to the hospital, thus we lost valuable time It is possible that in the course of time there may be a certain degree of stretching of the fibrous mass which fills up the position formerly occupied by the crucial ligaments, with a consequent development of motion in the joint I have not considered it justifiable to attempt to gain mobility by the use of forcible passive movement, so in this case I look upon the result—viz, firm fibrous ankylosis—as likely to be permanent.

In the second case after four months' work, there has been a definite increase in the mobility of the injured knee but I do not anticipate further appreciable increase, as there is very stout resistance to flexion beyond 20 degrees The man is doing heavy work with comfort, and expresses himself as very satisfied with the result The accompanying radiograms are probably unique For their existence and for the notes of the cases on admission to the hospital I am indebted to my former house surgeons, Dr Booth and Dr von Mengershausen

References—Jones R Injuries to Joints 1915 Notes on Military Orthopædics part vi Brit Med Jour August 5th 1916 Jones and Alwyn Smith: On Rupture of the Crucial Ligaments of the Knee and on Fractures of the Spine of the Tibia Brit Jour Surgery July 1913

OUR contemporary *Knowledge* (83, Avenue Chambers, W C 1) which was founded by the late Richard A Proctor in 1881 and has for many years disseminated accurate scientific knowledge in a popular form is to be a quarterly magazine during the war

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THE OPERATIVE TREATMENT OF ABDOMINAL ANEURYSM

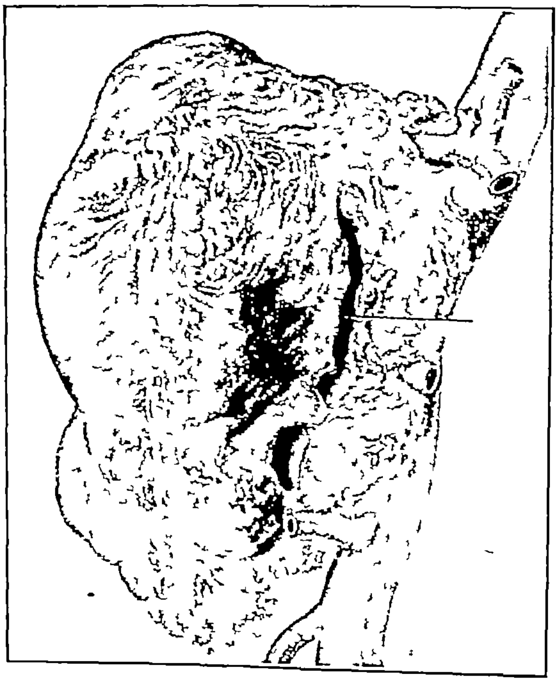
BY W I DE C WHEELER, F R C S IREL.,
HON MAJOR R A M C HON SURGEON TO THE FORCES IN IRELAND

FIVE years ago, at the annual meeting of the British Medical Association held in Birmingham,[1] I brought before the Association the details of two cases of abdominal aneurysm treated by operation A year later a third case came under my care, and, like the others, was treated by the introduction of wire into the sac I am now in a position to record the results of operation in the three cases, and in so doing hope to add some information to a subject which has engaged surgical attention for many years

It is noteworthy that every reported series of cases treated by operation contains a percentage of cures, but the earlier cases dating from the year 1865 showed a discouraging mortality Osler states that Nature occasionally cures a case Now and again the physician is able to effect a cure, but he had never seen such a case, and in a few instances he thinks that the surgeon prolongs life or even effects a complete cure Most of the cases mentioned by Osler lived from a few hours to six months after operation, one surviving three and a half years

The recognition of the fact that the introduction of a foreign body into an unhealthy area such as wire into an aneurysm, requires an aseptic technique of a very special kind, has rendered the results of recent operations more favourable In a case of fracture treated by the application of screws and plates accidental sepsis may be retrieved by the removal of the screws and plate but once the wire is introduced into the sac of an abdominal aneurysm it is past recall and the surgeon is unable to retrace his steps

FIG 1



Side view of aneurysm. The line marks the point of rupture (One-half natural size)

The use of Colt s apparatus[2] removes the danger caused by the advance of wire from the sac of the aneurysm into the aorta beyond At least six cases succumbed to this cause in the old days Rupture of the aorta or of a secondary aneurysmal sac may to some extent be obviated by the rigid application of antispecific treatment as it is now understood There is also the possibility of emboli being carried on the point To date we have had access to 97 *carriers of Entamœba histolytica* cysts invalided from France or Flanders as dysentery convalescents The results obtained by exami nation of the blood are shown in Table II —

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[1] Brit Med Jour 1911 THE LANCET 1911 ii 607
THE LANCET 1903 ii 808

TABLE II —*Agglutination Tests in the Case of Amœbic Carriers from France*

Number of cases	97
Number of cases in which the blood agglutinated B Flexner	26
Number of cases in which the blood agglutinated B Shiga	7
Number of cases in which the blood failed to agglutinate either B Flexner or B Shiga	64

Of these 97 cases 66 had never been with any other than the B E F, nor had they at any time previous to the war visited a country in which amœbic dysentery is known to be endemic They must, then, have become carriers in France In 38 of these 66 cases a history of contact with likely sources of infection was obtainable

For sake of comparison it was decided to examine in a similar manner carriers of *Entamœba histolytica* cysts invalided from the Mediterranean area, with a few exceptions from Salonika The results obtained are set forth in Table III —

TABLE III —*Agglutination Tests in the Case of Amœbic Carriers from the Mediterranean*

Number of cases	98
Number of cases in which the blood agglutinated B Flexner	5
Number of cases in which the blood agglutinated B Shiga	28
Number of cases in which the blood failed to agglutinate either B Flexner or B Shiga	65

It will be noticed that the percentage of positive and negative agglutination tests is identical with that obtained in the cases invalided from France When, however, the cases with positive agglutination tests are considered it is found that some 78 per cent of the French cases are accounted for by the B Flexner, whilst conversely over 80 per cent of Mediterranean cases are accounted for by B Shiga Finally amœbic carriers admitted to the hospital from the Forces in India, Mesopotamia, and Egypt have been similarly examined The results are exposed in Table IV —

TABLE IV —*Agglutination Tests in the Case of Amœbic Carriers from India, Mesopotamia, or Egypt*

Number of cases	35
Number of cases in which the blood agglutinated B Flexner	1
Number of cases in which the blood agglutinated B Shiga	3
Number of cases in which the blood failed to agglutinate either B Flexner or B Shiga	31 (88 5%)

The experiments referred to above are, in our opinion, suggestive from several points of view For the reason, however, that they only form the beginning of a series of researches we do not propose, for the present, to go more deeply into matters than we have already done

One conclusion of practical import may, however, be emphasised It is highly important that careful protozoological as well as bacteriological and serological examinations be made in every case of dysentery coming under investigation A positive bacteriological or serological finding, for example does not preclude the necessity for a careful protozoological examination

In conclusion, it is a pleasant duty to acknowledge our indebtedness to Lieutenant-Colonel T H F Clarkson, R.A.M C, officer commanding Mont Dore Military Hospital, Bournemouth, for permission to publish this note and for whole hearted support and encouragement

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LITERARY INTELLIGENCE —The fourth edition of Mr Comyns Berkeley's Handbook of Midwifery is announced for early publication by the house of Cassell It has been considerably expanded to meet the additional requirements of the Central Midwives Board and to render it suitable for obstetric dressers

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TRAUMATIC DISLOCATION OF THE KNEE JOINT

A REPORT OF TWO CASES

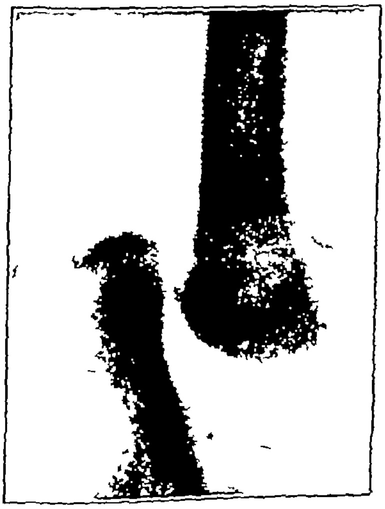
BY HARRY PLATT, M S LOND, F R C S ENG,
HONORARY SURGEON AND SURGEON IN CHARGE, ORTHOPÆDIC DEPARTMENT ANCOATS HOSPITAL, MANCHESTER CAPTAIN R A M C (T) 2ND WESTERN GENERAL HOSPITAL

(*From the Orthopædic Department, Ancoats Hospital*)

COMPLETE traumatic dislocation of the knee-joint is a condition seen so infrequently that it is well worth while recording all cases of this type During the last 18 months two individuals with this rare injury have been admitted to the Ancoats Hospital Manchester, under my care and I have had an opportunity of controlling the treatment in both cases and of observing the functional result obtained

CASE 1 —L S, a female aged 20, whilst crossing a field in the dark, slipped, caught her left foot in a hole, and fell over backwards on to her left side She was brought to hospital on Sept 17th, 1915, within an hour of the accident, a tentative diagnosis of fractured femur having been made by an outside doctor On examination the left knee-joint revealed an obvious complete dislocation, the femur being displaced backwards, the upper end of the tibia being abnormally prominent with a deep hollow above. The amount of effusion in and around the joint was strikingly small, and there were no signs of any circulatory obstruction in the limb A radiogram (Fig 1) was taken before reduction was attempted this latter manœuvre being accomplished with ease by Dr W S Booth, the senior house surgeon to the hospital The limb was then put up on a back splint, and after ten days' stay in hospital the patient was sent home to Wolverhampton, a plaster cast having been applied extending from the toes to the groin Five months later the patient was readmitted to hospital and the cast removed The injured joint was now absolutely stiff in the position of full extension, no motion could be elicited even though considerable force was exerted A radiogram showed atrophy of the cancellous tissue of the bone ends, but there was a clear cartilage line on both bones The girl began to walk on the limb, wearing a calliper splint for the first two months Her present condition (15 months after the accident) is as follows The knee joint is firmly ankylosed, the patella being adherent to the anterior surface of the femur The patient walks well without pain and is following her occupation

FIG 1



L S dislocation of knee-joint Backward displacement of femur no lateral displacement

CASE 2 —J E, a man aged 47 fell from the top of a ladder to the ground a distance of 12 feet his left knee striking a plank, the point of impact being localised to the inner side of the joint He was admitted to hospital on April 1st 1916 some 20 minutes after the accident The left knee showed all the signs of a complete dislocation, with the femur displaced backwards and slightly outwards There was a moderate effusion into the joint, but no evidence of vascular obstruction A skiagram (Fig 2) was taken before reduction by the senior house surgeon, Dr H M von Mengershausen Reduction, as in the first case, presented no difficulties At the end of a week the man left hospital with his leg in a plaster cast. This fixation was maintained for four months On removal of the plaster the joint allowed five degrees of mortem wounds, for the percentage of cases in which septicæmia resulted was very small The anaerobic organisms were found in great numbers in the damaged bone tissue, especially in sequestra and in fragments of detached bone, this lent support to the method of treatment adopted by Major Swan, especially in view of the fact that the organisms persisted for many months in their comparatively secluded positions He attached some importance to the preparatory course of mixed vaccines which had been employed Since early treatment was desirable he advocated the use of heterogeneous vaccines prepared from cultures grown on the blood of patients who had got well and sensitised with the corresponding antitoxins until an autogenous vaccine had been prepared

Colonel WARING agreed in the main with the contentions of Major Swan His experience had led him to prefer early excision and free drainage, with efficient flushing to primary incision and excision at a later date Speaking of the muscular power which might follow excision of joints, he recalled a case of a man whose elbow joint had been excised in pre aseptic days but who had subsequently been able to carry on his work as a blacksmith

Mr RAYMOND JOHNSON spoke of the unsatisfactory results from treatment by incision, drainage, and flushing alone in the early stages and thought that Major Swan had made out a case for his method which demanded for it a satisfactory trial It was desirable, he thought Major Swan would admit to excise the ends of all the bones entering into the joint whether all were damaged or not In two cases under his observation where this had not been done the results had not been good.

Dr HELEN CHAMBERS said that observations which she had made at the Women's Military Hospital, Endell street, had shown that irrigation by solutions into septic wounds only rendered the surface sterile when one of two solutions was used—eusol or Dakin's solution Even then the result was only temporary What was needed was some application the effect of which was continuous Such could only be applied in the form of a paste. The bismuth iodoform paste satisfied the condition and had proved very useful

Major SWAN, in his reply, agreed that excision of all the ends of bones was desirable *provided* that the gap produced was not unduly wide (wider than two fingers' breadth) He had not found any one solution of greatest value but favoured a change *from* one solution to another He was not convinced of the usefulness of bismuth iodoform paste, having met with failures where he had to remove it, and had found the surrounding tissues contained many organisms

ROYAL ACADEMY OF MEDICINE IN IRELAND

SECTION OF OBSTETRICS

Pneumonia in the Puerperium —Backward Displacement of the Uterus

A MEETING of this section was held on March 2nd, Dr GIBBON FITZGIBBON, the President being in the chair

Mr SPENCER SHEILL read a paper on a case of Pneumonia in the Puerperium The patient developed a mammary abscess, which was opened on the eleventh day Up to the ninth day her temperature was normal After the operation double septic pneumonia set in from which she died six days later There was no evidence of septic infection elsewhere than the breast The principal point of interest was the origin of the pneumonia.

Dr R D PUREFOY said it appeared to him that the breast condition was a local evidence of a general septic condition, which developed with accelerated speed after the abscess was treated Rokitansky and McClintock had recorded cases of puerperal sepsis, attended with suppuration in the breast

Dr BETHEL SOLOMONS considered that the case was probably one of embolic pneumonia secondary to the mastitis He regretted that Mr Sheill had not attempted to obtain a culture from the mammary pus or from the uterus as an autogenous vaccine might have helped in treatment

Dr H C DRURY showed charts of patients who had developed pneumonia during pregnancy The prognosis was, he said favourable for the mother and bad for the child as premature labour often occurred Labour had a beneficial effect on the disease

Mr SHEILL, in reply, stated his belief that septic emboli from the breast caused the trouble, and that these were admitted to the circulation by the use of Bier's apparatus, which created such powerful suction as to rupture some small veins, and that when the pressure was released septic matter was drawn into these veins He suggested that suction treatment was fraught with danger in cases where the abscess did not freely communicate with the surface

Dr ALFRED SMITH read a paper on the Operative Treatment of fixed Backward Displacement of the Uterus

Reviews and Notices of Books.

Glaucoma A Handbook for the General Practitioner By ROBERT HENRY ELLIOT, M D Lond, F R C S Eng, Lieutenant-Colonel I M S (retired) London H K Lewis and Co, Limited 1917 Pp 60 Price 3*s* 6*d* net — Lieutenant-Colonel Elliot has written a short but clear account of glaucoma, excellently illustrated He deals successively with the anatomy of the parts concerned in glaucoma, the intraocular pressure, the pathological anatomy, causes, diagnosis, signs and symptoms, and treatment of the disease He has addressed the general practitioners, but whether these readers will find the help they require is in our opinion doubtful The book is written from the specialist's point of view, and insufficient guidance is given as to diagnosis, which is, after all, what the general practitioner wants For example, he should be instructed minutely as to the distinction between iritis and glaucoma yet the only reference to iritis in the whole book occupies less than three lines In spite of the usual warnings as to the use of mydriatics the author says, on p 51, "there are cases in which the bold use of atropine or of eserine, selected according to the exigencies of the individual case, may prove invaluable." The exigencies which demand the use of atropine are by no means precisely stated, and the general practitioner will gain little help from such statements Neither will he be much the wiser for brief accounts of all the modern operations for glaucoma, several of which have been practically abandoned in England We agree with nearly all that Lieutenent-Colonel Elliot says in his book, which none the less appears to us to fail somewhat in the object for which it was written

Collected Papers on Circulation and Respiration Second Series Clinical and Experimental. By Sir T LAUDER BRUNTON, Bart London Macmillan and Co 1916 Pp 719 Price 5*s* net.—Brunton did not live to see the completed publication of his collected papers on Circulation and Respiration This second volume is a large one, containing 68 articles with 256 illustrations covering a period from 1883 to 1915 The last article on Functional Diseases of the Arteries was published in our columns in July, 1915 Some of the articles, such as that 'On Posture and its Indications," are almost classical in their familiarity, all give evidence of Brunton's chiefest aim in life to leave therapeutics as a science, instead of merely an art as he found it This volume is not merely a monument of hard thinking, but also a token of the success of his aim

Minor Surgery and Bandaging (Heath and Pollard) For the Use of House Surgeons, Dressers and Junior Practitioners By H MORRISTON DAVIES M D, M C Cantab Sixteenth edition London J and A Churchill. 1917 Pp 476. Price 8*s* 6*d* — Three years ago this 55-year old manual was successfully remodelled with a view to modern requirements A chapter has now been added on the general principles of treatment of gunshot wounds of the limbs The author states in his preface that it would be impossible to deal generally with the whole subject of military surgery without materially altering the scope and character of the book We think that in the next edition this will have to be done as the surgical lessons of the war are not long to be kept in a water tight compartment, but will have their influence on every department of peaceful surgery

The Microscopy of Vegetable Foods By ANDREW I WINTON, Ph D with the collaboration of Dr JOSEF MOELLER and KATE BARBER WINTON Ph D Second edition With 635 illustrations London Chapman and Hall Limited, New York John Wiley and Sons, Inc 1916 Pp 701 Price 27*s* 6*d* net —The increasing number from the sac during, or after, the introduction of the wire, death from this cause, however, has been extremely rare

The results of my three cases are as follows —

In the first case of aneurysm of the aorta in the region of the cœliac axis, operated upon in August, 1910, a cage of 150 inches of Colt's wire was introduced At the time of operation the aneurysm was thin walled and seemed ready to burst The patient is still alive and well, at daily work in a brewery The aneurysm has consolidated and a loud systolic murmur present before operation has disappeared

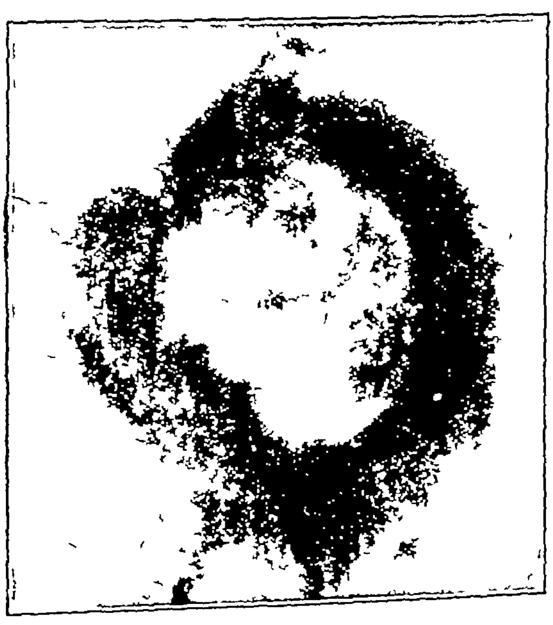
The second case, also reported upon in 1910, died in March, 1916, from rupture of the aneurysm, when acting as a stoker in the R N R on board a patrol trawler A wisp of 105 inches of wire was introduced in this case A complete post-mortem examination was obtained, the details of which are given below

The third case was operated upon in 1912 and died about a week after the introduction of the wire from rupture of the aneurysm following intestinal obstruction A gastro enterostomy was performed in this case as the aneurysm was obstructing the pylorus The loop of jejunum fixed to the stomach became strangulated by pressure between the abdominal wall and the aneurysm, the consequent vomiting led to rupture of the sac

In analysing these three cases the first man may be fairly said to be cured The operation was performed six years ago, at a time when the sac was large and thin walled At present the only remaining sign of an aneurysm is a hard mass which transmits the pulsation of the aorta to the abdominal wall The patient is in good health and performs a full day's work

The second case lived over five years, and died, while acting as a stoker on board a trawler, from rupture of the sac From the post-mortem examination it may be fairly claimed that this case was practically cured, and but for the fact that the man was occupied in one of the most strenuous occupations the greatly consolidated aneurysm might never have ruptured

FIG 2



X ray photograph showing Colt's wire within the sac.

No conclusions can be drawn from the result of Case 3, the rupture of the aneurysm after the introduction of the wire being obviously due to the vomiting of acute intestinal obstruction

I am indebted to Surgeon H E King Fretz, R N, for the following post-mortem examination and other notes on Case 2

The patient, aged 37 a stoker, R N R, on one of the patrol trawlers, was admitted into the Naval Hospital on March 12th, 1916 He complained of vomiting and severe shooting pain in the right lumbar region simulating renal colic There was tenderness in the region of the appendix and pain on deep inspiration He was sweating freely and in a state of collapse There was a large pulsating tumour which practically occupied the whole of his epigastric region, apparently an aneurysm of the abdominal aorta His temperature was 97° F, pulse 120, full and regular, systolic pressure 280 mm, diastolic pressure 120 mm. His urine showed a heavy deposit of urates and a trace of albumin There was an excellent scar to the left of the mid line 3 inches long, the result of operation five years ago A systolic bruit could be heard over the swelling, propagated all over the abdomen and down both femoral arteries There was a marked diastolic sound in the mitral area and a very accentuated second sound in the aorta Seven days after admission he died The swelling continued to pulsate long after respirations had ceased

At the autopsy it was found that there was a small leak, the hæmorrhage penetrated between the layers of the mesentery, separated them widely apart, and surrounded a large portion of the small intestine The right kidney was pushed forward Both kidneys and spleen were normal in size, the right kidney having small granular patches on the surface The heart was much enlarged Now for the aneurysm, I am not exaggerating when I say that the clot formed in it is as hard as a rock, the aneurysm itself is about the size of a full term fœtus' head It appears to me as if there is a secondary dilatation of the aorta below the main swelling and that is where the trouble arose'

I am also indebted to Surgeon King Fretz for the specimen which is faithfully illustrated in Fig 1, and for the X ray photograph showing the wire *in situ* (Fig 2)

It is noteworthy that all three cases presented themselves at hospital complaining of severe pain in the back, and that in none was there any erosion of the vertebræ It is possible that the intense pain in the back, common to cases of abdominal aneurysm may be due to the stretching of the highly sensitive posterior parietal peritoneum, which is also in these cases subject to a pull at every pulsation of the tumour

Dublin

Medical Societies.

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

Exhibition of Autochromes

A MEETING of this section was held on March 27th, Dr T D ACLAND being in the chair

Dr C R BOX and Mr WALTER EDMUNDS exhibited a series of autochromes illustrating the rashes of rubella, measles, scarlet fever, typhoid, cerebro-spinal fever, and pellagra in cases treated at the London Fever Hospital The autochromes were the products of a three colour process, the rays of light being transmitted through starch granules, coloured respectively green, orange, and violet, before coming into contact with the customary photographic emulsion This permitted a very faithful portrayal of the characteristic rashes The chief drawbacks to the method were the length of exposure necessary with daylight the intensity of the arc light required when daylight was not used the impossibility of reproduction, and, for demonstration purposes the short distance from the screen at which the images must be viewed to appreciate their details

SECTION OF SURGERY

Treatment of Severe Infected Gunshot Injuries of the Shoulder and Elbow Joints

A MEETING of this section was held on March 14th Colonel H J WARING being in the chair

Major R H. JOCELYN SWAN read a paper on the above subject, in which he advocated early excision of the joints with the object of obtaining mobility The paper is published in full in our present issue

Mr KENNETH GOADBY who had been collaborating with Major Swan, spoke from the bacteriological standpoint He showed by lantern slides of the pus the high degree of septicity of such wounds Besides ordinary pyogenic organisms anaerobes (*B perfringens* the bacillus of malignant œdema, *B Hibler IX*) were commonly present The streptococci did not seem to be as virulent as those found in civilian practice, such as in post-mortem wounds, for the percentage of cases in which septicæmia resulted was very small. The anaerobic organisms were found in great numbers in the damaged bone tissue, especially in sequestra and in fragments of detached bone, this lent support to the method of treatment adopted by Major Swan, especially in view of the fact that the organisms persisted for many months in their comparatively secluded positions He attached some importance to the preparatory course of mixed vaccines which had been employed Since early treatment was desirable he advocated the use of heterogeneous vaccines prepared from cultures grown on the blood of patients who had got well and sensitised with the corresponding antitoxins until an autogenous vaccine had been prepared

Colonel Waring agreed in the main with the contentions of Major Swan His experience had led him to prefer early excision and free drainage, with efficient flushing to primary incision and excision at a later date. Speaking of the muscular power which might follow excision of joints, he recalled a case of a man whose elbow joint had been excised in pre-aseptic days but who had subsequently been able to carry on his work as a blacksmith.

Mr Raymond Johnson spoke of the unsatisfactory results from treatment by incision drainage, and flushing alone in the early stages and thought that Major Swan had made out a case for his method which demanded for it a satisfactory trial It was desirable, he thought Major Swan would admit to excise the ends of all the bones entering into the joint whether all were damaged or not In two cases under his observation where this had not been done the results had not been good.

Dr Helen Chambers said that observations which she had made at the Women's Military Hospital, Endell street, had shown that irrigation by solutions into septic wounds only rendered the surface sterile when one of two solutions was used—eusol or Dakin's solution Even then the result was only temporary What was needed was some application the effect of which was continuous Such could only be applied in the form of a paste The bismuth iodoform paste satisfied the condition and had proved very useful

Major Swan in his reply, agreed that excision of all the ends of bones was desirable provided that the gap produced was not unduly wide (wider than two fingers' breadth) He had not found any one solution of greatest value but favoured a change from one solution to another He was not convinced of the usefulness of bismuth iodoform paste, having met with failures where he had to remove it, and had found the surrounding tissues contained many organisms

ROYAL ACADEMY OF MEDICINE IN IRELAND

Section of Obstetrics

Pneumonia in the Puerperium —Backward Displacement of the Uterus

A meeting of this section was held on March 2nd, Dr Gibbon FitzGibbon the President being in the chair

Mr Spencer Sheill read a paper on a case of Pneumonia in the Puerperium The patient developed a mammary abscess, which was opened on the eleventh day Up to the ninth day her temperature was normal After the operation double septic pneumonia set in from which she died six days later There was no evidence of septic infection elsewhere than the breast. The principal point of interest was the origin of the pneumonia.

Dr R D Purefoy said it appeared to him that the breast condition was a local evidence of a general septic condition which developed with accelerated speed after the abscess was treated Rokitansky and McClintock had recorded cases of puerperal sepsis, attended with suppuration in the breast

Dr Bethel Solomons considered that the case was probably one of embolic pneumonia secondary to the mastitis He regretted that Mr Sheill had not attempted to obtain a culture from the mammary pus or from the uterus as an autogenous vaccine might have helped in treatment

Dr H C Drury showed charts of patients who had developed pneumonia during pregnancy The prognosis was he said favourable for the mother and bad for the child as premature labour often occurred Labour had a beneficial effect on the disease

Mr Sheill, in reply, stated his belief that septic emboli from the breast caused the trouble, and that these were admitted to the circulation by the use of Bier's apparatus, which created such powerful suction as to rupture some small veins, and that when the pressure was released septic matter was drawn into these veins He suggested that suction treatment was fraught with danger in cases where the abscess did not freely communicate with the surface

Dr Alfred Smith read a paper on the Operative Treatment of fixed Backward Displacement of the Uterus

Reviews and Notices of Books.

Glaucoma A Handbook for the General Practitioner By Robert Henry Elliot, M D Lond, F R C S Eng, Lieutenant-Colonel I M S (retired) London H K Lewis and Co, Limited 1917 Pp 60 Price 3*s* 6*d* net —Lieutenant-Colonel Elliot has written a short but clear account of glaucoma, excellently illustrated He deals successively with the anatomy of the parts concerned in glaucoma, the intraocular pressure, the pathological anatomy, causes diagnosis, signs and symptoms and treatment of the disease He has addressed the general practitioners, but whether these readers will find the help they require is in our opinion doubtful The book is written from the specialist's point of view, and insufficient guidance is given as to diagnosis, which is, after all, what the general practitioner wants For example, he should be instructed minutely as to the distinction between iritis and glaucoma yet the only reference to iritis in the whole book occupies less than three lines In spite of the usual warnings as to the use of mydriatics the author says, on p 51, "there are cases in which the bold use of atropine or of eserine, selected according to the exigencies of the individual case, may prove invaluable.' The exigencies which demand the use of atropine are by no means precisely stated and the general practitioner will gain little help from such statements Neither will he be much the wiser for brief accounts of all the modern operations for glaucoma, several of which have been practically abandoned in England We agree with nearly all that Lieutenent-Colonel Elliot says in his book, which none the less appears to us to fail somewhat in the object for which it was written

Collected Papers on Circulation and Respiration Second Series Clinical and Experimental. By Sir T Lauder Brunton, Bart London Macmillan and Co 1916 Pp 719 Price 5*s* net.—Brunton did not live to see the completed publication of his collected papers on Circulation and Respiration This second volume is a large one, containing 68 articles with 256 illustrations covering a period from 1883 to 1915 The last article on Functional Diseases of the Arteries was published in our columns in July, 1915 Some of the articles, such as that 'On Posture and its Indications,' are almost classical in their familiarity, all give evidence of Brunton's chiefest aim in life to leave therapeutics as a science, instead of merely an art as he found it This volume is not merely a monument of hard thinking, but also a token of the success of his aim

Minor Surgery and Bandaging (Heath and Pollard) For the Use of House Surgeons Dressers and Junior Practitioners By H Morriston Davies M D, M C Cantab Sixteenth edition London J and A Churchill. 1917 Pp 476 Price 8*s* 6*d* —Three years ago this 55-year old manual was successfully remodelled with a view to modern requirements A chapter has now been added on the general principles of treatment of gunshot wounds of the limbs The author states in his preface that it would be impossible to deal generally with the whole subject of military surgery without materially altering the scope and character of the book We think that in the next edition this will have to be done as the surgical lessons of the war are not long to be kept in a water tight compartment but will have their influence on every department of peaceful surgery

The Microscopy of Vegetable Foods By Andrew L Winton Ph D, with the collaboration of Dr Josef Moeller and Kate Barber Winton, Ph D Second edition With 635 illustrations London Chapman and Hall, Limited, New York John Wiley and Sons Inc 1916 Pp 701. Price 27*s* 6*d* net —The increasing number of publications on the microscopy of vegetable foods may be welcomed as likely to be helpful in the detection of fraud The pioneer work in this direction was largely done in THE LANCET Analytical Commission which in the "seventies" exposed, by means oftentimes of the microscope alone, the extent to which the adulteration of foods was then practised This exposure subsequently led to legislative steps being taken which are now embodied in the present Sale of Food and Drugs Acts in this country The authors of this large volume have taken considerable pains to produce a work of value and its text and the illustrations will give assistance to analysts and others in this country as well as in the United States The chapters on histology and morphology are the best features of the book, but now and again the illustrations are not as well drawn as they might be, and the context here and there is meagre and scrappy A good deal of ground is, however, covered, and the copious references to literature serve a useful purpose

X Rays By G W C KAYE M A, D Sc Second edition London Longmans, Green and Co 1917 Pp 285 Price 9s —We welcomed the appearance of this authoritative book when it first appeared three years ago The present edition has been revised by the author, as far as his military duties permit, up to the middle of 1916 A chapter on X ray equipment and technique has been added by Mr W F Higgins Accurate in presentation and attractive in style the book will continue to achieve its purpose

Sewerage The Designing, Construction and Maintenance of Sewerage Systems By A PRESCOTT FOLWELL Seventh edition, revised and enlarged London Chapman and Hall, Limited, New York John Wiley and Sons, Inc 1916 Pp 540 Price 12s 6d net —This book illustrates with a wealth of detail the way in which the problems of sewage engineering and disposal are being attacked in the United States It deals fully with the important question of practical sewer construction, and is divided into four parts, the first devoted to designing, the second to construction, the third to maintenance, and the fourth to disposal The question of utilisation does not appear to have come any nearer a practical issue in the United States than it has done in this country In fact, the writer says, speaking of chemical treatment and precipitation methods, "no method has yet been found by which the fertilising values of sludge can be made use of to sufficient advantage to induce farmers to use it even when it is given them free of cost, except in a few cases" The author then refers to the sludge ships which convey the sludge from the London sewage works 50 miles out to sea and dump it there The book will be valued by engineers engaged in this important branch of sanitary science and to some extent by chemists, the appendix containing a useful account of the analytical methods employed in testing sewage, and a short bacteriological section on the examination of effluents in regard to bacterial reduction

Essentials of Physiology By F A BAINBRIDGE and J ACWORTH MENZIES Second edition With 173 illustrations London Longmans Green, and Co 1916 Pp 478 Price 12s 6d net —This is the second edition of a companion volume to the "Essentials of Histology" (Schäfer) of "Morbid Histology" (Grünbaum), and of "Chemical Physiology" (Halliburton), and maintains the high standard of the series Although avowedly written with the primary object of meeting the requirements of the medical student preparing for a pass examination, it is in no sense a cram book and no one can read it carefully without gaining a useful insight into the whole field of modern physiology The book is indeed remarkable for its even and adequate treatment of all parts of the subject, and for the average high standard of the illustrations which are drawn from many sources The text is clear and interesting to read

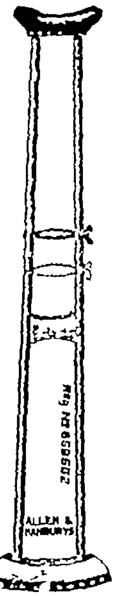
Some Modern Methods of Ventilation, with Special Reference to Public Buildings By R GRIERSON With illustrations, charts, and tables London Constable and Co, Limited 1916 Pp 187 Price 8s 6d net —While the author s point of view is largely the engineering one it is clear that he keeps in mind the physiological considerations on which methods of ventilation must be based if they are to give satisfactory results. Thus he speaks of the conditioning" of the air which is the most important factor in the situation and he accepts the dictum of Dr Leonard Hill that the physical effect upon the skin is the supremely important thing, not its chemical effect This view has now received general acceptance, and so the conditioning of the air as regards its physical state—e g , humidity, movement equable temperature freedom from dust, and so forth—is much more to the point than keeping down a carbonic acid gas contamination As the author observes, "Even more disconcerting to the old school of hygienists must be the growing practice of American engineers to arrange for recirculation of the air many times in succession," and the washing plant is left to maintain the air of the ventilated space in a pure condition This system it is added effects considerable economy in the fuel bill in cold weather, and we may take it that the authorities are satisfied that the air so treated is wholesome The book contains much useful information on standards of ventilation, design of ducts selection of fans washers and heaters specifications, test forms, and specimen schedules for designers, which will be consulted with advantage by those approaching these questions from a practical and rational point of view

A Hausa Botanical Vocabulary By JOHN M DALZIEL, M D B Sc Edin, D T M London T Fisher Unwin Limited 1917 Pp 119 Price 6s 6d net —The author of this useful compilation is a member of the West African Medical Staff, and has carefully utilised his opportunities The book is more than a vocabulary, and many descriptions of plants are given under their native names Under *dawa*, Guinea corn or great millet, are described some two dozen varieties of a food which the Hausa eats in the form of porridge, and to which he attributes special strength giving properties. The medicinal plants include a small field herb of the order *Polygalaceæ, sa hankali dako*, which is used in syphilis on the ground of its local reputation At the end of the book is given an index of genera and of popular names

New Inventions

AN IMPROVED CRUTCH

ANY improvement in the construction of crutches will no doubt be welcomed at the present time A crutch made of the ordinary ash sticks is shown in the diagram fixed at the lower end into a piece of hard wood curved at the base and shod with rubber (which I shall call the roller) and screwed to a block fixed below the handle The handle is fixed by a bolt and fly nut and can be adjusted to suit any length of arm The head is of the bridge type, the webbing stretched across being tubular and stuffed with horse-hair Attention may be drawn to the use of the roller at the foot, by which the rate of progression is materially increased and the pressure on the axilla is reduced As compared with the ordinary type of crutch the pace is increased at each step by the length of the arc of the circle taken by the roller This arc has been fixed at about 11 inches or less as being easily accommodated in railway trains omnibuses, and other places where space is important The most serviceable curve is the arc of a circle having a radius of 2 or 3 ft An important feature is the reduction in the tendency to skid on slippery surfaces



The new crutch has its defects it cannot be shortened so easily for use by a smaller man, it is heavier than the ordinary form of crutch and it is a little more costly to produce The extra weight is probably the only defect which will not in time be remedied and even this is largely compensated by the improvement in the balance which renders it more easily controlled

Mr George E Healing 3, Wilton Crescent mews, Belgravia is the inventor and the makers are Messrs Allen and Hanburys, Wigmore street W

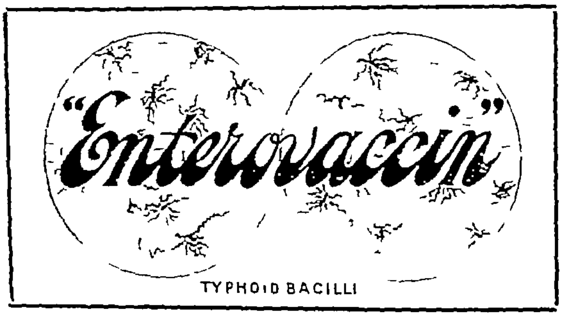
C A. JOLL F R C S Eng

Wimpole-street W

INOCULATION BY THE GASTRO-INTESTINAL TRACT IN PRACTICAL THERAPY.

From Papers read before the Therapeutical Society of Paris and the Academy of Sciences, Paris
By M Auguste Lumiere and by Messrs Lumiere and Chevrotier, Dr J P Dubarry, Prof A Chauveau

ANTITYPHOID



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Enterovaccin is put up in hermetically sealed tins containing 28 spherules, sufficient for a complete treatment (one week) Each spherule contains per milligramme
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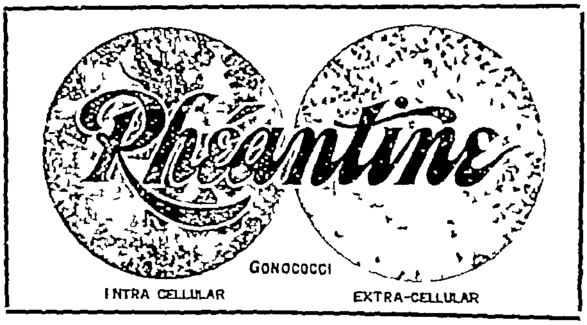

The clinical reports given by various Doctors show that **Rheantine** gives highly satisfactory results, both in acute and chronic forms of Gonorrhœa and also in the various infectious complications due to Neisser's bacillus

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Each spherule contains approximately 50 millions of bacilli derived from 24 different stocks

Rheantine is therefore a strongly polyvalent vaccine

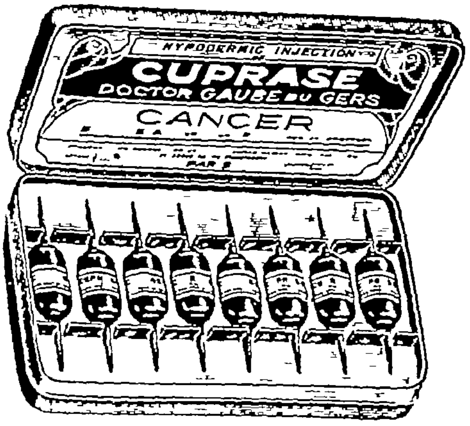
CUPRASE

For the Medical Treatment of CANCER.

Extract from Proceedings of the Royal Society of Medicine February 1913 —

Dr George Herschell, comparing electric and chemical colloid copper stated Chemical colloid appears to give the best results In the following cases chemically prepared colloid was used. Experimentally it has been proved: (1) That particles of colloid copper can be demonstrated in the granulations of cancerous growths after two or three injections of the colloid and clinically (2) There is invariably great relief from pain (3) Appetite and strength return and the patient puts on flesh; (4) There is in many cases a diminution in the size of the tumour (5) The injections are absolutely non-toxic, although in many cases an inflammatory reaction is manifested in the cancerous growths

As regards my own personal experience in the use of this method of treatment In addition to my own cases I have had an opportunity of observing the effects in the practice of some of my medical friends and in nearly all cases the progress of the disease appeared to be arrested"



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THE LANCET.

LONDON SATURDAY, APRIL 7, 1917

Radiation in Malignant Disease

As old diseases are abolished or brought under control, new ones arise or new aspects of disease which were previously overlooked But cancer remains with us in spite of half a century of special hospitals and many years of intensive research, and the new Ministry of Public Health when instituted will find no task of greater difficulty or importance than to deal with malignant disease in all its forms Recent work with radium and the X rays in cases of malignant growth has begun to raise some hopes of a possible solution in this direction That we have in these sources of radiation a powerful ally in the war against malignant disease is now very generally admitted, but it cannot be said that it is being employed as yet to an extent justified by our present knowledge The reports and the paper by Captain A. A RUSSELL GREEN published elsewhere in this issue will serve to call attention to what is now actually being achieved, and a careful examination of the results attained by the workers in Edinburgh, Manchester, and Birmingham must, we think, go far to convince even the most sceptical of the value of the methods employed

The site of the growth naturally has a material influence on the treatment It is more or less an axiom among radiologists that the more superficial the lesion the more likely is it to be benefited by any form of radiation, and the high percentage of successful results in the treatment of rodent ulcer illustrates this clearly Difficulties increase in direct proportion to the depth to which the disease has invaded, the deeper structures, and modifications in technique are required on this account A study of the cases given in the reports from Edinburgh and Manchester especially shows that some measure of success has attended the efforts to overcome these difficulties The burying within the growth of tubes containing either radium or its emanation has produced excellent results, and this method holds out possibilities of permanence, since the base of the growth, from which metastasis arises, is attacked concurrently with its more superficial parts A further and a logical application of the principle here involved would indicate the removal of the more superficial parts of a malignant growth in order that the base may be more efficiently attacked The remarkable control of the X rays and radium over fungation removes the surgeon's most serious objection to operating under these circumstances, and is a further argument for a still closer coöperation between the surgeon and the radiologist than exists at present

The choice between radium and the X rays in dealing with cases of malignant disease is still in the stage of discussion, and it is doubtful if any good purpose could be served by advocating one at the expense of the other Each has its advantages as well as its disadvantages, and they have much in common The difficulty of obtaining radium in any quantity makes it rare, but its scarcity is compensated for largely by the constancy of its output—a condition that has greatly facilitated the development of radium therapy In contrast with the irregularity of the output from the X ray tube radium itself gives us a profuse supply of radiation easily and cheaply obtained This drawback to the use of X rays is, however, materially reduced in the latest form of tube construction Indeed, as a result of the introduction of the Coolidge tube it is not impossible that X ray therapeutics will undergo very considerable modifications Whichever method, however, is being practised, certain points have already emerged with more or less certainty, and the most important of these is the danger of delay Every day's delay diminishes the patient's chances of complete recovery, and this principle applies particularly to operable cases However favourable a case may appear, no surgeon can be sure that he has removed every trace of malignancy, or, indeed, that he himself has not scattered malignant cells over the field of operation Nothing should be left to chance, and as prophylactic radiation involves no necessity for disturbing the dressings or the patient, it should be commenced the day after operation. Another important matter of general agreement is that within reasonable limits long applications are preferable to short ones Perseverance, too, is a scarcely less powerful factor for success Many patients needlessly throw away months or years of useful and comfortable existence through failure to follow the advice that is given them In the light of the experience hitherto gained it is not too much to say that a good case has been made out for the use of some form of radiation in the great majority of malignant cases, and that its more general employment will have a favourable influence on their prognosis

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The Departmental Committee on Approved Societies and National Insurance

THE Departmental Committee which has had the finance of Approved Societies under its consideration in connexion with the part played by them in National Insurance issued an Interim Report in May and a Further Report in October, 1916, bringing its labours to a conclusion with a Final Report in February of the present year The Committee was asked by the terms of its reference, it will be remembered, to report upon any amendments in the financial scheme of the National Insurance Acts which experience of the administration of sickness, disablement, and maternity benefits might suggest to be desirable The amendments to be considered would, it was thought, necessarily be within the limits of contributions and benefits as they now stand and apart from further grants by the Exchequer although last week's resolution proposed by Mr KINGSLEY WOOD, a member of the National Insurance Advisory Committee, at a conference of Approved Societies, foreshadowed a substantial increase in maternity benefit as part of the expected infant welfare legislation. Further, the Committee was asked to make recommendations as to how far amendment of the National Insurance Acts and of the regulations made under them might simplify the work of the Societies and reduce its cost without detriment to the interest of the insured. The subject of the inquiry was therefore strictly limited to criticism, and to proposals having for their object the effecting of improvement under existing conditions or under conditions not radically altered, in matters connected with the finance and administration of Approved Societies.

In the two reports issued last year the Committee dealt with a variety of subjects intimately affecting Approved Societies and their finances, and suggested means whereby it seemed that a substantial measure of simplification in the machinery of the Acts and regulations might be secured. It was of the opinion, as stated in the report issued in October, 1916, that in the circumstances in which the Approved Societies were called upon to take part in National Insurance it would be neither fair nor reasonable to expect in the earliest youth of a newly devised system a simplicity and smoothness of working equal to that already established by the Friendly Societies after long experience in the conduct of their usual affairs, and it was predicted that whatever changes might be brought about as the result of experience, compulsory insurance upon the lines with which we are now becoming familiar must necessarily remain a highly complicated and intricate part of our social machinery. The report neither supported the views of those who complain that the Acts are too cumbrous and complex in character, nor did it express any expectation that its own deliberations would have as a result the cessation of complaints along the familiar and often reasonable lines. Those interested in the aspects of State insurance which present themselves to, and concern the Societies will, of course, study the reports as published. If they are technical they are carefully confined to elucidating the essential features of the matters dealt with, which are not always those which concern the medical profession as a whole, closely associated as that profession is with the working of National Insurance. The question of paying sickness and disablement benefit in respect of illness due to venereal diseases is, however, one matter in which the medical profession is deeply interested, as the stewards of the public health of the country rather than in the rôle of pathologists. The Committee recommends in its Final Report that, having regard to the danger to the community in the case of the person affected by venereal disease, Societies ought so to alter their rules as to enable benefits to be paid to a class of sick and disabled persons who hitherto have been excluded from them. The suggestion has everything to commend it, as is reflected in the opinion of all intelligent laymen. The sick person of the class which depends upon a Friendly Society for maintenance when wages cease on account of inability to work has a better chance of recovery when he is able to draw a weekly sum for his sustenance than he has if cessation of work means complete loss of income. He is also more likely, if he can draw sickness benefit without hindrance or comment and as a matter of right, to take effective steps towards regaining health in the early stages of illness. His recovery will remove a source of danger to other members of the community, and the prevention, or, failing this, the prompt treatment of his disease, is a matter now rightly recognised as one of national importance. At the same time, the alteration of the rules of a body of contributors to a common fund, in order to allow payments to be made to a class which was expressly excluded from participation in that fund when those contributors agreed to subscribe to it, presents some difficulty. The objections of those who will oppose any such change as that indicated will not necessarily depend upon sentiment or prejudice due to the association of venereal diseases with avoidable acts of immorality. They will be founded upon the entry of subscribers into a contract under conditions which it is proposed to alter to their detriment, a possible compensation being offered to them dependent upon the acquisition of a disease from which they may see no prospect of suffering. How far the opportunity to benefit the community by helping to diminish the prevalence of venereal diseases may appeal to persons thus situated will be tested if the recommendation of the Departmental Committee is sought to be adopted in any particular society, but the objectors will certainly occupy a strong position. Another question of equal or greater importance, financially and otherwise, to the Societies and their members is that of the payment of sickness and disablement benefit in the case of tuberculous disease during the period of after care. As to this the Committee refers to the existence of a national scheme, liberally assisted out of public funds, for the treatment of the whole community, including the uninsured and the insured. In view of this, the Committee did not feel justified in asking that the Societies should undertake a fresh burden. They had it in their power to render material assistance and to develop their policy so as to facilitate the promotion of useful experiments in "the wider field of public health," and beyond this they should not be asked to go. A third question, connected with the public health side of National Insurance, relates to inquiries into the causes of excessive sickness. As to this, the Committee pointed to the examples before it of the segregation of insured persons into societies of distinctive occupational hazard, and advised that the Insurance Commissioners, before any inquiry of the kind referred to was held, should satisfy themselves that a *prima facie* case for holding it had been made out.

With reference to the Further Report of the Committee made last October, we are reminded, while dealing with the Final Report, that the former contained a useful recommendation affecting hospitals and the duties of Approved Societies towards them in respect of payments The bulk of the Further Report, as we have said, was concerned with finance, and was of interest mainly to the Societies themselves, but the recommendation referred to dealt with contributors who are hospital in patients, and to the inability of Approved Societies to pay benefit to any member for his own direct personal benefit while an inmate of an institution The Further Report of the Committee advised that payment should be made to the dependents, if any, of a patient in a hospital or institution if he should so desire, and that in the case of a patient without dependents money otherwise due to him should, on his authorisation and at the discretion of his society,

> (a) Be utilised, in whole or in part, to defray any expenses otherwise than in respect of treatment or maintenance, for which he may be, or become, liable while he is in the institution, or so far as not so utilised, (b) be paid over to the authorities of the institution (not being a Poor law institution, or other institution maintained out of public funds) under an agreement entered into by his society, either generally or in the particular case

This would appear to render the contribution of an Approved Society to a hospital in respect of a particular patient dependent upon a combination of circumstances which would limit such payment to comparatively few occasions Contributions to Insurance Committees in respect of tuberculous patients treated in sanatoriums, also dealt with in the Further Report, are on a somewhat different basis The Committee here took the view, laid before it by some of the witnesses, that money so paid would better be devoted to helping the patient to recover complete health after discharge from the sanatorium The three reports taken together constitute an interesting document, the very limitations of which, due to restrictions of the reference made to it, serve to remind us of the impossibility of dealing effectively and upon a large scale with many of the problems of National Insurance before war is over Sir E CORNWALL doubtless had this difficulty in mind when he stated in the House of Commons last Monday his intention of making the Advisory Committee to the Insurance Commissioners a more workmanlike body by reducing its numbers from 168 to 30, and his proposal to appoint a small separate medical advisory committee is also a step in the right direction

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DONATIONS AND BEQUESTS —By the will of the late Mr Francis Reckitt, of Beaconsfield, Bucks, the testator bequeathed £5000 each to the Great Northern Central Hospital, for their Convalescent Home and Dr Barnardo's Homes, £2000 to the King Edward's Hospital Fund, £1000 each to the Royal Hospital for Incurables, Putney, the Mount Vernon Hospital for Consumption and Diseases of the Chest Hampstead the Hull Royal Infirmary, and the Hull and East Riding Convalescent Home £500 each to the Hull Children's Hospital and the Cancer Hospital Brompton — The late Miss Caroline Emma Chretien has left by will the proceeds of the sale of Nelson House, Bexley Heath, to Bexley Cottage Hospital for an enlargement of the hospital to be known as " the Chretien Wing or Ward " and from the proceeds of sale of her other real estate legacies to the Royal Blind Pension Society and Poplar Hospital for Accidents Under the same will the London Hospital will receive Consols and stock of the value of nearly £5000

Annotations.

"Ne quid nimis"

MODERN CARDIOLOGY

IT is probable that the treatment of heart disorders can show a more substantial advance during the last 20 years than has been witnessed in any branch of our science since Laennec revolutionised our knowledge of thoracic disease a hundred years ago The contributing factors to this chapter in clinical medicine, which has been ably reviewed by Dr G A Sutherland in the Lumleian lectures this year, are to be traced, not only to the improved instrumental methods of examination of the heart, but particularly to the newer conceptions and clinical ideas which these methods have engendered For a long time it happened that our knowledge of the physiology of the circulation advanced in the laboratory, while the practical application of that knowledge remained very limited Even the introduction of the earlier graphic methods failed to realise the hopes which were founded on them A certain scepticism was aroused as to their value at the bedside, and this attitude extended at first to the later polygraphic methods of Sir James Mackenzie But the conditions were entirely different when Sir James Mackenzie's work began to attract the thoughtful attention of clinicians Gaskell had by this time established the coördinating factors of auricular and ventricular action Mackenzie perfected the means of clinically studying their respective actions, and, advancing along these lines, recognised that irregularity of the heart's action may not only be a matter of academic interest but might offer the key to the whole clinical course and character of many cardiac conditions There had been evolved, in fact, a living pathology of the heart Discovery followed discovery in quick succession, culminating in the final recognition of that most important condition auricular fibrillation The story of that condition—how it came to be identified and how its practical significance, and, above all, its response to treatment were verified—forms one of the most satisfactory chapters in clinical medicine, and was effectively detailed in our columns by Dr Sutherland Criticism will naturally not be wanting when some of these newer conceptions run counter to the teachings of the past, and Dr F J Smith finds that Dr Sutherland's exposition of modern cardiology defaults in not doing proper justice to the teachings, and especially the therapeutic successes, of such leaders of medicine as Gawen Sutton and Andrew Clark. We think Dr Smith, while rightly standing out against what he considers slight of the labours of past teachers, has not appreciated the real situation There need be no quarrel with the older school, no lack of reverence and respect for those past masters to whom we owe so much It is the manner in which their views have been distorted by subsequent teachers which, we imagine, falls mainly under Dr Sutherland's condemnation Newer methods have certainly widened our views of heart disease, but in doing so they have also induced an even greater sense of our ignorance than was perhaps felt by some of the earlier teachers to whom cardiac pathology must have seemed a simpler affair than it is to day More over, if the upshot of modern learning is to confirm previous routine a great advance has been made—the advance from empiric routine, with its risks of misapprehension, to scientific procedure with its sure basis for application and modification We do not find, therefore, Dr Sutherland's lectures lacking in respect for anything that is vital in the teachings of his predecessors, and while mere theory finds small space in his lectures, cardiac therapeutics, as far as they are represented in the employment of digitalis, receives the careful attention which it merits, and we think that many of the older clinicians, had they been present at the lectures, would have been gratified to find their intuitions confirmed by later physiological research Heart block is now found to be a far from rare clinical condition, and other arrhythmias have their true place and significance in pathology All this work has come to stay But if one thing stands out more particularly revealed by these new methods it is this the essential importance of clinical subjective symptoms This later work has only heightened the significance of the patient's own feelings, his "field of cardiac response" Instrumental methods can never replace clinical bedside observation, and it is to this latter field that these Lumleian lectures are so fittingly devoted And while we respect and have every sympathy with Dr Smith s attitude in championing the memory of the great men gone from us, we do not think that the neglect of which he complains has occurred widely or is in evidence in the last Lumleian lectures

MIGRATION OF SHELL FRAGMENT FROM THE FEMORAL VEIN TO THE RIGHT VENTRICLE

IN the *Journal of the American Medical Association* of Feb 7th Professor H M Lyle, of Columbia University, has reported a remarkable case observed by him when in France acting as chief surgeon of the Ambulance d'Annel, Oise A Zouave, aged 31, was brought to the ambulance Fours hours previously he had received a perforating shell wound of the left thigh, 4 cm above the knee, and a penetrating shell wound of the right thigh Radioscopy of the thigh and lower abdomen failed to reveal any foreign body Unfortunately the upper abdomen and thorax were not examined The failure to find the shell fragment was puzzling, as the depth and direction of the wound seemed to preclude the possibility of the particle having fallen out The patient was in a condition of mild shock The temperature was 97 2°F, the pulse 126, and the respiration 28 Physical examination of the chest and abdomen was negative Contused skin was cut away, the wound was laid open, and the projectile track lightly but methodically excised No foreign bodies were discovered. At the bottom of the wound of the right thigh the femoral vessels were found embedded in a clot, the femoral vein was bruised, but apparently intact Two Carrel instillation tubes were inserted and 20 c c of Dakin's hypochlorite solution were delivered to the wound every two hours The patient appeared drowsy and slept the greater part of the first two days On the third day the abdomen became greatly distended, and he complained of pain and tenderness over the spleen and right kidney The distension was partially relieved by lavage and enemas Jaundice appeared on the morning of the fourth day, and was accompanied by pain and tenderness over the liver The temperature rose to 102 2°, the pulse to 132, and the respirations to 32 Fine moist râles were heard at the left base The area of cardiac dullness increased, a pericardial rub was heard, and the cardiac sounds were indistinct A provisional diagnosis of general gas bacillus infection with pericarditis and pneumonia was made In the afternoon there was a temporary improvement, followed by sudden death a little later Throughout the wound remained sterile At the necropsy the wound of the right thigh was found to be 10 cm below and 5 cm. posterior to the anterior superior spine of the ilium The track led forward, downward, and inward to the femoral vein In the external wall of the vein there was a small valve like wound sealed by an organised clot There was no local evidence of gas infection Both the lungs were œdematous, there was fibro purulent pericarditis with free gas in the pericardial cavity The heart was enlarged, and its external surface was covered with a fibro purulent exudate On section the heart showed gaseous crepitation A rough shell fragment was found free in the cavity of the right ventricle, measuring 1 5 cm by 0 9 cm by 0 5 cm, and weighing 1 81 gm. Fibres of clothing were adherent to the irregular surface of the fragment. The liver, spleen, and kidneys were enlarged On section all yielded gaseous crepitation There was no obstruction to the gall bladder or gall ducts Evidently the fragment of shell entered the femoral vein and thence migrated to the heart A radioscopic examination of the chest might have revealed the presence of the shell fragment, which could have been dealt with by operation Bullets in the cavity of the heart have already been extracted with success in the present war

THE CLEARING OF THE PAVEMENT

THE sanitary state of our streets is important, and considerable inconvenience is sometimes caused by the present shortage in the regular service for ensuring it It ought not to be too much to ask householders, shopkeepers, and others to keep the pavement in front of their holdings swept. The work for each individual would entail neither much time nor energy If such individual civic responsibility had been insisted upon last Monday in the metropolis after the heavy fall of snow the appalling state of slush on the pavements would have been prevented As it was, the pedestrian found walking to be both dangerous and uncomfortable, and we have little doubt that a crop of minor accidents occurred through a slip on the pavement Apart from these, the constant wading through the slush was a real ordeal for the feet, few boots appearing to be proof against its penetrative powers The pedestrian whom the state of the pavement has cost an illness or an accident may well ask why the obvious remedy is not enforced

ANTIMENINGITIS INOCULATION

IN the summer of 1916 a mild epidemic of cerebro spinal fever occurred in an infantry regiment of over 1200 men at Fredriksstad in Norway Eight cases occurred, and as isolation of the patients and their contacts seemed ineffective in preventing the spread of the disease Dr E Aaser was detailed in August to make a bacteriological investigation of the epidemic This he did by the microscopical examination of smears, stained by Gram's method, of the naso pharyngeal mucus of every man in the regiment Time and the necessary facilities for any more accurate method of examination were lacking, Dr Aaser says[1] that he isolated as meningococcus carriers all the men whose naso pharyngeal mucus contained a large majority of Gram negative diplococci, and regarded as "doubtful" cases those whose mucus contained a few such diplococci He found 87 carriers and 70 doubtful cases among the men of the three regimental companies in which cases of cerebro spinal fever had occurred, no such cases had occurred among the 280 men of the fourth company or among the 100 regimental cyclists, and Dr Aaser discovered 40 doubtful cases among these but no meningococcus carriers To stop the spread of the epidemic it was decided to offer to inoculate every man in the regiment with a meningococcal vaccine It so chanced that one of the meningococcus carriers, isolated by Dr Aaser, developed meningitis next day and died This fact, coupled with fear of the meningococcus carriers, induced all but two or three of the men to be inoculated The vaccine used was a sterilised emulsion of cultures of eight or ten strains of meningococcus, containing 300 million cocci per c c the dose was 1 c c The inoculations were carried through in ten hours A few of the men had slight chills and head ache during the night following the inoculation, but none were seriously incommoded, most had a redness and swelling measuring 3 × 5 cm at the site of inoculation Dr Aaser injected himself with 3 c c of the vaccine without any ill result, and a few days later took a second injection of 4 c c equally without any general reaction The plan had been to give all the men a second inoculation four or five days after the first There was some unwillingness at this point but it happened that a general order was issued just then stopping all leave for the rest of the training in the case of those not vaccinated So all the men received a second inoculation, the dose being 1 c c In general this produced more local redness but less local swelling, and a weaker general reaction than the first inoculation No further case of cerebro spinal fever occurred in the regiment after this vaccination, during the general autumn manœuvres, but whether *propter* or merely *post hoc* Dr Aaser does not attempt to decide He notes that a similar prophylactic anti meningitis vaccination was carried out in the winter at Tönsberg, 250 men receiving three successive inoculations with 1, 2, and 3 c c of meningococcal emulsion, without any harmful result

THE CONSERVATION OF MILK

THE prevention of waste would go far to solve the food problem at the present time, and one of the most promising ways of doing this is by preserving perishable foods Liquid foods are specially liable to loss and contamination, and should therefore be desiccated Methods which in the past have been found wasteful may well now prove to be economical in view of shortage and advanced prices We shall soon arrive at the period of the year when the maximum output of milk is reached, and the waste of this valuable fluid food material is notorious Its preservation by concentration with the addition of sugar is already severely handicapped by the shortage of the preservative itself, besides which the milk syrup so produced is not ideal *for general food* purposes Milk, of course, can be concentrated without the addition of sugar, but the product cannot be said to be satisfactory, as it is very liable to chemical changes, involving, for example, the precipitation of its milk sugar and of calcium salts, chiefly in the form of citrate The desiccation needs to be carried a step further and the whole of the water removed But there are two difficulties about the complete drying of milk The first is that if too high a temperature is employed the constitution of the milk is seriously disturbed the albumins are coagulated, enzymes are destroyed, the fat is separated, and the resulting powder does not re form an emulsion with anything like the appearance and character of milk Nevertheless, the product thus obtained possesses a high nutritive value and would save much waste of useful food, particularly in the summer The water can, however, be easily withdrawn from milk by another process, which consists first in concentrating the fluid at a low temperature in a vacuum pan and then forcing the concentrated milk through a spray producer into a capacious chamber through which flows a current of warmed air The moisture is thus carried away and a fine dry powder falls, which may be swept out This product amalgamates perfectly with water, the fluid tasting like fresh milk and having exactly the appearance of the natural emulsion Moreover, it still shows enzymic activity, the albumins are uncoagulated, the fat is not separated, and caseinogen is still present in unaltered form But by whatever process dried milk powders are made one great trouble arises sooner or later the fat deteriorates, becoming partially rancid, and giving the product a repulsive flavour and smell Even skim milk, retaining as it invariably does a small proportion of fat, deteriorates in the same way sufficiently to make it distasteful after a time If this problem could be solved there would be no longer any reason for employing fluid milk at all and an enormous economy of valuable food material would be gained We could then, so to speak, keep the cow in the larder to be drawn upon exactly as domestic necessity arises The resulting revolution in the supply and distribution of milk would bring substantial gain to the community on many counts

DR Frederick Taylor was re elected President of the Royal College of Physicians of London on Monday last

AT the Harveian Society of London, Stafford Rooms, Titchbourne street, Edgware road, W 2, on April 19th, at 8 30 P M, Dr P J Cammidge will read a paper on the Treatment of Diabetes by Alimentary Rest

LEICESTER ROYAL INFIRMARY —The 144th annual report states that during the year 1916 the number of adult in patients admitted to the civil wards was 2888, as compared with 3032 in the previous year, and of children 645 compared with 616 To the military wards 571 patients were admitted during the year compared with 692 in 1915 The average number of beds occupied was 190 (civil) and 85 (military) Although the expenditure for the year was heavy—namely £31,855—it had been met by a generous increase in the ordinary income, the year closing with a small credit balance The report urges the need for a new pathological department at an estimated cost of £5000 or £6000

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[1] Tidsskrift f d Norske Lægeforening Christiania 1917 xxxvii 174

A RECORD OF
61 CASES OF NEOPLASMATA OF THE SKIN TREATED BY X RAYS OR RADIUM[1]

BY A A RUSSELL GREEN, M B, B S LOND, M R C S,
CAPTAIN R A M C (T) RADIOGRAPHER TO THE FIRST SOUTHERN GENERAL HOSPITAL AND TO THE BIRMINGHAM AND MIDLAND SKIN HOSPITAL

THE neoplasmata of the skin here reported are all of a malignant character The writer caused to be circularised every case of this nature which had attended the Electrical Department of the Birmingham Skin Hospital during the last four years and in the results here set down there has been no selection of cases, some indeed coming for treatment with the knowledge that no permanent benefit could be expected To 61 inquiries, 41 replies were received the majority reporting in person

Table I —This group of cases, 27 in number out of the 41 whose *final history I have traced* represents the cases that have completely healed, two only *having relapsed* at a later period Nos 1 to 20 have been treated with radium Nos 21 to 23 have been treated with X rays, and Nos 24 to 27 have been treated with X rays and radium With the exception of No 17, which is Paget s disease of the nipple, and No 27, which is epithelioma, they are all cases of rodent ulcers It is a notable feature in this group that in only three instances has any *method of filtration been employed* No 16 was filtered *through 0 25 mm* of aluminium and Nos 21 and 23 through 0 75 mm of aluminium It was also noticeable that while in some cases reaction was brought about by the treatment, in others it was absent, and in No 26, which had *several marked reactions* under X rays, no improvement took place until radium was applied, and I consider reaction as an incidental rather than an essential part of the curative process

The view once held that X *rays act purely through* their destructive effect on the tissues is untenable, as anyone who has seen treatment of *ringworm* by this means will realise

One of the points upon which I desired to get evidence was as to whether in cases treated with radium small frequent doses or larger doses at longer intervals were more efficient An examination of Table I shows that where the initial exposure was over half an hour, the average duration of treatment was 5½ months, while in those in which it was half an hour or less, the average was 10 months Of the nine cases treated with small doses six refused to heal until applications varying from three-*quarters of an hour to six hours were given*, *the other three* healed under the smaller doses, two have remained healed, the third *has relapsed* These three cases healed within three months

The other case in this group (No 18) which relapsed was treated by hourly applications of radium, increased later to six hours, and healed in six months After the relapse the patient was placed under radium treatment again, and while being so treated was painted with liquor hydrarg nitrat acid (not by me), a *proceeding* which I feel prejudiced his recovery He is now attending the Radium Institute, and writes to say that his case is considered to be hopeful

Cases treated by X rays —The following three cases were treated by X rays —

No 21 had pastille doses until she reacted, five such doses in six weeks

No 22 had small doses of X rays

No 23 had half pastille doses thrice weekly, 30 applications in all, and in the latter stages of her treatment filtered through 0 75 mm of aluminium

Cases treated by radium and X rays —In all these four cases the essential curative agent has been radium

No 24 was treated with small doses of radium 12 minutes thrice weekly, healed in five months, and was given a prophylactic dose of X rays

No 25 was treated with X rays for four months without improvement She was then put on 1 hour doses of radium and after 16 applications the ulcer healed

No 26 was treated with pastille doses weekly, several marked reactions taking place, but no healing resulting The case ultimately cleared up after the application of radium in ? to 1 hour doses

No 27 was a case of epithelioma *of the hand* in a man aged 76 This case attended for two and a half years, and the lengthy *period of attendance* was *due to the difficulty* experienced in healing the simple ulcer left after the treatment, healing was finally brought about by the application *of silver nitrate*

Table II —Traced unhealed cases —Of the eight cases *treated by radium* three have ceased attendance

No 31 by *order of* the honorary surgeon under whom he first attended

No 32 was very irregular, but in any case I should write *him down a failure, as he attended for more than six months* without *any improvement*

No 35 was healed by X rays *eight years ago but relapsed* and while being treated by radium became the subject

TABLE I —TRACED HEALED CASES

TABLE II —TRACED UNHEALED CASES

Note —In the columns headed Treatment, where the sign — separates the figures the first figure indicates the number of applications, and the second figure the duration of such application

No	Age	Duration of ulcer (years)	Treatment	Duration of treatment (months)
			Radium	
1	49	12	97 hrs 3 to 6 hrs each	8
2	63	1	8—6 hrs	9
3	60	2	1—8 hrs 4—3 hrs 8—6 hrs	3½
4	79	2 12	4—½ hr	2
5	40	1	4—2 hrs 4—½ hr	5½
6	69	3	32 hrs 20 mins to 3 hrs	12
7	70	1/4/12	7—1 hr	1
8	66	1	12 mins thrice weekly	3
9	80	2	8½ hrs 5 to 60 mins	7
10	60	3	9—6 hrs	6
11	51	5	6—1 hr	1
12	66	20	10½ hrs 10 to 45 mins	5
13	43	1	16 hrs 1 hr thrice weekly	2
14	49	12	3—6 hrs 2—4 hrs 2—1 hr 1—2 hrs	3½
15	42	5	12 hrs 5 to 60 mins	30
16	42	6	1—3 hrs	5
17	49	2/12	143 ½ to 6 hrs	24
18	47	—	1—6 hr	6
19	60	17	2½ hrs 5 to 15 mins	3
20	59	—	4 hrs	9
			X Rays —Pastille Doses	
21	35	3	5 P	1½
22	77	15	2½ P	3
23	68	5	15 P	4
			X Rays and Radium	
24	69	2	1 P 12 mins thrice weekly	5
25	60	4	26 P 16 hrs radium	18
26	62	20	30 P 12½ hrs radium	33
27	76	30	3, P 128 hrs radium	9

No	Age	Duration of ulcer (years)	Treatment	Duration of treatment (months)
			Radium	
28	70	10	9 hrs	1
29	70	3	3—2½ hrs	2
30	58	3/12	4 hrs	3
31	65	8	2—1½ hr	2
32	38	9	37—½ hr 4—6 hrs 1—10 hrs	13
33	68	—	4 hrs	3
34	73	—	4—½ hr 1—12 hrs	2
35	51	16	Short exp thrice weekly	4
			X Rays —Pastille Doses	
36	72	1	3½ P	8
37	47	—	12 P	3
38	69	17	4—½ P	4
39	48	—	9 P	2½
			X Rays and Radium	
40	72	12	2 P 82 hrs radium	22
41	62	10	3 P 51 hrs radium	17

TABLE III —UNTRACED CASES LAST NOTE HEALED *

No	Age	Duration of ulcer (years)	Treatment	Duration of treatment (months)
			Radium	
42	55	5	6—6 hrs	3
43	74	3	6½ hrs 10 mins thrice weekly	7
44	60	4½	39—1 hr	19
45	—	2	3½ hrs 10 mins to 1½ hrs	2
46	64	6	95½ hrs	28
			X Rays	
47	—	4	9½ P	4
48	34	1	9 P	11
			Radium and X Rays	
49	69	2½	3 P 6½ hrs radium	2
50	51	1½	50 P 6 hrs radium	19
51	59	9	17 P 8 hrs radium	12
52	47	10	184 P 86 hrs radium	—
53	57	9	10 P 9 hrs radium.	25

* The remaining 8 of this group have no note as to final condition

TABLE IV

Of all cases that can be traced 66 per cent are healed, and have remained healed for the following period —

Between 3-4 years	7	Under 1 year	4
Between 2-3 years	4	Relapsed	2
Between 1-2 years	9		

Of those treated by —

Radium	70% healed.
X rays	43%
Radium and X rays	66% ,

No 17 was diagnosed as Paget s disease of the nipple No 27 as epithelioma of the wrist All other cases in this table were diagnosed as rodent ulcer of general enlargement of the lymphatic glands without characteristic blood changes, and ceased to attend

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[1] A report to the Midland Medical Society

Of the five still attending, No 28 is making satisfactory progress No 29 is nearly healed

No 30 is of some medico-legal interest, especially to radiologists She is 58 years of age, and has had lupus as long as she can remember Thirty five years ago she was treated at the Queen's Hospital, Birmingham, by scraping and caustics, but has had no treatment since Three months ago she came to my department with an epithelioma arising within the lupus area. Had this case been treated by X rays or radium it would have been cited by the critics of these methods as being due to the treatment The prognosis is bad in cases of epithelioma arising in lupus very rapid growth resulting doubtless due to the high vascularity of the parts

No 33 is progressing satisfactorily, and No 34 is a case too deeply involved to expect any result in treatment

Of the four cases treated by X rays, No 36 is improving

No 37 is attending the General Hospital, Birmingham, and writes that he is getting much benefit from radium treatment

No 38 died from apoplexy during treatment

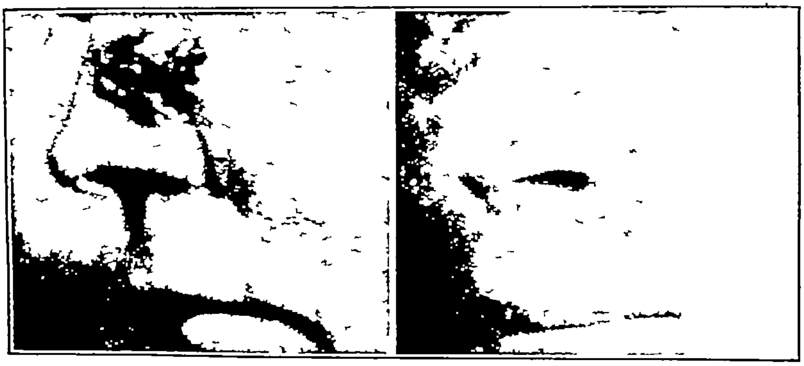
No 39 is a chronic alcoholic and ceased attendance after two and a half months

Of the two cases treated by X rays and radium, No 40 shows that improvement is possible even with such extensive involvement of the deeper tissues

No 41, a very extensive case with cicatrisation round the edges complained of such intense pain after treatment that, having regard to the bad prognosis I told him to cease to attend

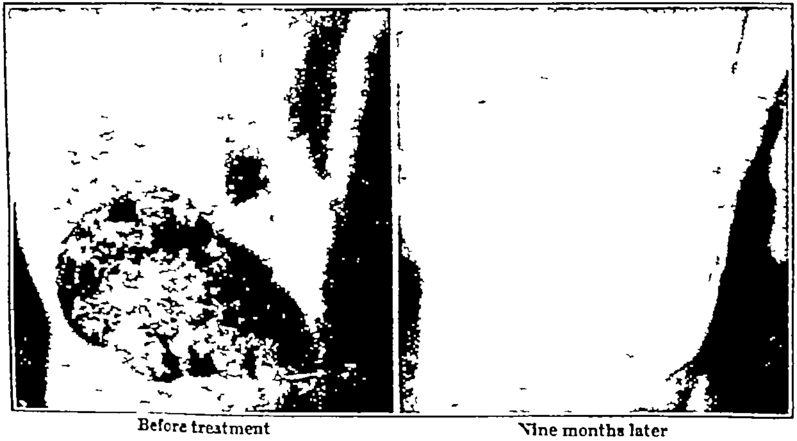
Table III — Untraced cases — I have not discarded the 20 untraced cases but by examining the out patient records (facilities for which were courteously placed in my way by the honorary surgeons) I was enabled to arrive at some conclusions concerning them 60 per cent being healed This corresponds pretty nearly with the figure obtained in the traced healed cases which is 66 per cent. Of the unhealed group four were in an advanced stage of epithelioma when they first attended the other cases on the table being rodent ulcers

FIG 1 (Case 10)*



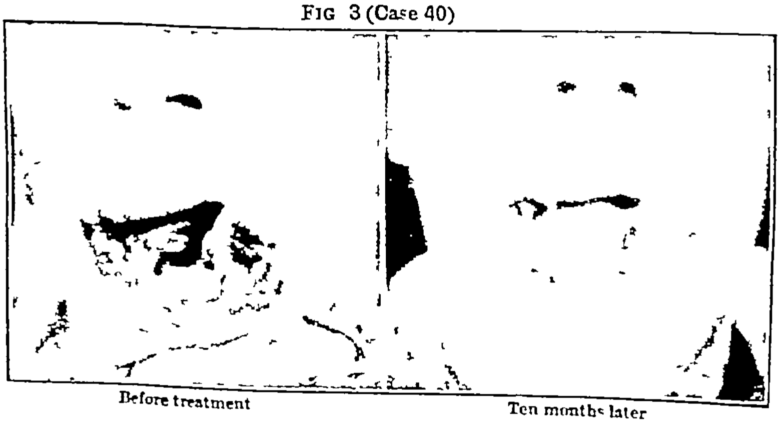
Before treatment Six months later

FIG 2 (Case 27)



Before treatment Nine months later

FIG 3 (Case 40)



Before treatment Ten months later

Method of dosage —The radium in use is pure radium bromide, and is certified as such by the Curie Laboratory It is spread on metal plates in the proportion of 5 milligrammes to each square centimetre of surface The X rays were employed as full or fractional Sabouraud doses, this being the quantity of X rays required to bring about the fall of the hair of the scalp without visible reaction, or permanent injury to the hair follicles and is a sharply defined dose

Supplementary treatment — I have found two methods of supplementary treatment useful (*a*) Electrolysis for the small nodules that are sometimes left at the periphery of the scar, and which are liable to become centres of subsequent relapse, has proved much more useful to me than the application of carbonic acid snow, in case No 27, concurrently with the first exhibition of radium, I transfixed the base of the epithelioma with an electric needle in some half dozen places (*b*) Autogenous vaccines in cases that have been obstinately septic, I have found of great value

Table IV shows the periods for which the patients have remained healed

Conclusions

To draw conclusions from so limited a number of cases is, I know, liable to mislead, but so far as these cases go they appear to demonstrate or illustrate that —

1 The administration of radium in less than one hour doses of the strength specified is likely to prove unsatisfactory, although small doses of X rays and radium will sometimes bring about healing

2. Radium will heal when X rays have failed

3 In most superficial cases screening is not necessary

4 Cases that are going to do well will do so within six months, and if they have not done so within that period a drastic revision of the treatment is imperative

5 Electrolysis and autogenous vaccines are useful as supplementary methods of treatment

6 Caustics are contra indicated

RADIUM TREATMENT IN EDINBURGH AND MANCHESTER

With a Description of

A TROCAR FOR THE INTRODUCTION OF RADIUM TUBES

ROYAL INFIRMARY, EDINBURGH

THE following abstract of the report to the managers on radium treatment at the Royal Infirmary, Edinburgh, during the year 1916 has been sent to us for publication by Dr Dawson Turner, who is in charge of the radium treatment at the infirmary

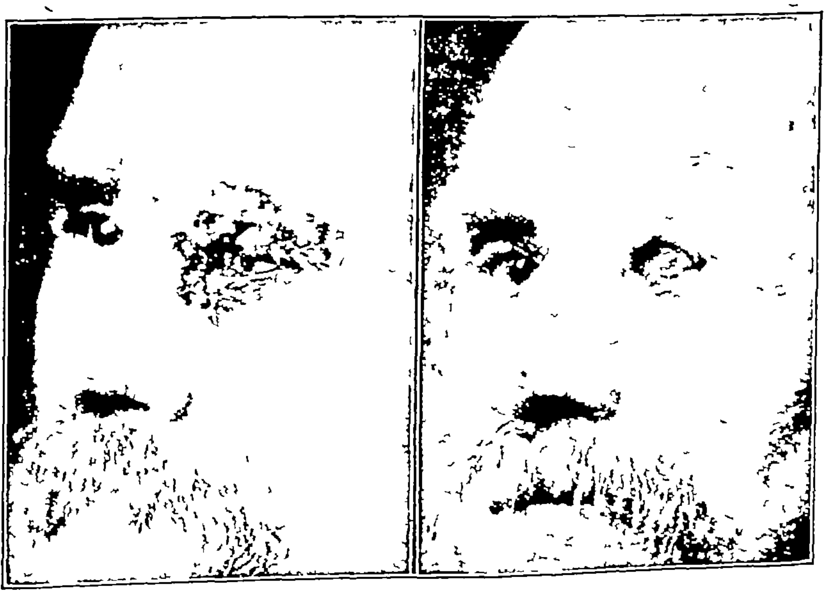
Sixty six patients attended for radium treatment during the past year, whereas 64 attended during the previous year The total attendances during the year were 520 Of the 66 patients half were in patients from other departments of the infirmary Twenty eight suffered from rodent ulcers, 25 from inoperable malignant disease, 7 of these affecting the vagina or cervix uteri There were 7 cases of exophthalmic goitre and 4 of nævi Amongst the malignant cases there were 8 sarcomas and 17 carcinomas The former are more amenable to radium than the latter, and sometimes disappear in a remarkably short time They are, in the writer's experience, invariably benefited by radium treatment, and if accessible and localised can be entirely removed Rapidity of growth is no contraindication to the use of radium, for rapidly proliferating cells are very vulnerable to its radiation, there is, in fact, reason for believing that they are more vulnerable than cells which in morphology and growth more nearly resemble the normal This has been brought to the writer's notice on certain occasions This leads to the important question, "Are all sarcomas equally amenable to radium treatment?" If a negative answer must be given to this—then what conditions determine a tumour's sensitiveness? Gaarenstroom, of the Amsterdam Cancer Institute,[1] is of the opinion that the histological structure is the chief criterion and that round-celled sarcomas generally react favourably, spindle celled less so, and polymorphous-celled least so He bases this opinion upon an experience of 23 cases treated by the Roentgen rays He made no use of radium and the effect of radium rays may not be quite the same as the effect of Roentgen rays At any rate, the writer has frequently had rodent ulcers sent to him for radium treatment which have been treated unavailingly by Roentgen rays, and these rodents radium has cured This may have been due, it must be admitted, to a more appropriate dosage and closer apposition Myelosarcomas, lymphosarcomas, large spindle celled sarcomas, and parotid mixed celled tumours are extremely sensitive, in the writer's experience, to radium rays (*Vide* Cases 1, 3, and 10)

Malignant disease of the vagina and cervix is favourably affected by radium treatment, and epitheliomas, if localised can confidently be expected to disappear Owing, however, to the difficulty of efficiently raying the more inaccessible portion of the growth, recurrence in these positions after a longer or shorter period of time is common This can be again subjected to treatment, but, as a rule, less successfully than the primary growth, and this for two reasons the one that the recurrence is probably situated in a less accessible position, as in an extension to the broad ligaments, the other that after a course of raying only those cells survive which are refractory to the rays and a recurrence consisting of such cells or daughter cells is less susceptible to attack There is a tendency by natural selection to breed cells which are immune The same phenomenon can sometimes, though rarely, be observed in rodent ulcers, an extended ulcer attacking perhaps bone or mucous membrane after repeated raying does not respond at all In these cervical cases, even though there should be recurrence, the patient has greatly benefited in the meantime by the removal of pain, the cessation of discharges, and the general gain in health and strength This gain in general health may be striking and equivalent, as some of the continental authorities have termed it to a virtual resurrection. (Cases 6, 7, and 8)

As observed in last year's report, rodent ulcers require no detailed notice, for the beneficial action of radium is generally admitted Uncomplicated cases situated on the skin and not too extensive for the amount of available radium invariably do well If they recur, which may be due to an insufficient primary treatment, they easily yield to a second course and remain cured The cosmetic result leaves nothing to be desired, and there is scarcely any subsequent contraction of the skin The case figured is a good illustration of this They are less amenable when situated on mucous membrane Though a single strong application may suffice to remove the rodent the writer prefers, when it is possible to divide the necessary dose into two or three administered at three or four days' interval It is important, in order to prevent a recurrence, that the deeper parts as well as the superficial should receive adequate treatment

Seven cases of exophthalmic goitre, five females and two males received radium treatment All benefited save one, an acute case, who died, in less than a month after the treatment, of hyperthyroidism As mentioned in last year's report, indisputable benefit is occasioned without any necessary obvious change in the organ, though generally it is diminished in size I would again draw attention to Rave's *experiments*[2] *on* cats and rabbits He administered large doses of X rays to the thyroids of these animals, and found from subsequent histological examination that no *recognisable* changes had been produced Confirmatory results have been obtained by others It appears then, that in the thyroid gland we have a structure which, so far as histological examination can carry us, is refractory to X rays Yet there is ample clinical evidence of the beneficial effects of irradiation in exophthalmic goitre

The following are brief notes of the more important cases treated except rodent ulcers, which have been purposely



A case of extensive rodent ulcer in a man 60 years of age treated with radium On the left, the condition in January, 1916 before treatment; on the right, the same case in January 1917 after treatment excluded Reference has also been made to one or two old cases whose progress it has been possible to follow

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[1] Archives of Radiology December 1916

[2] Vide Colwell and Russ Radium and the X Rays, p 212.

CASE 1.—Myelosarcoma of temporal region involving orbital cavity in a male aged 23, recommended by Professor Gulland Admitted Oct. 17th 1916. Duration three years Began by headaches and swelling of jaw A small operation was performed to remove the swelling Later a tumour appeared on the right temporal region On July 7th 1916, Professor Caird excised a fragment which was found by the pathologist to be a myelosarcoma. Professor Caird refused to operate. On admission there was a prominent swelling over the right temporal region accompanied by shooting pain difficulty in opening the mouth and strabismus An X ray showed that the frontal bone and upper jaw were involved On Nov 1st two radium tubes were inserted in Mr Dowden s absence by Dr White into the growth and external radium treatment was also begun. A total dose of 4920 mgh was administered. In a week s time the growth had diminished in size the headache was better and the jaw freer On Nov 28th 1916 there was no squint and no pain Professor Gulland examined him and wrote: I was delighted to see the patient to-day and to find that he had improved so very greatly He looks immensely better and I see no reason why he should not start work On Jan 23rd 1917 he continued quite well

CASE 2.—Scirrhus in a female aged 59 recommended by Dr David Huskie Admitted Nov 28th, 1916 A year ago Professor Caird removed patient s left breast for scirrhus In the line of the scar there is an ulceration with hard borders. It has been burned by Dr Huskie three times This ulcer was given a dose of 205 mgh during a fortnight A week later Mr Jardine examined her and wrote Result very successful, no more need for treatment. The ulcer and hardness had disappeared. Warned patient to report herself regularly to Dr Huskie.

CASE 3 —Recurrent sarcoma (old case) in a female aged 49 recommended by Dr Maclagan Duration four years Several operations for the removal of the growth without success. Admitted by Mr Miles on July 15th 1915 Now a large nodular mass projecting in the left suborbital region and adherent to the maxilla. Pathological report, large spindle-celled sarcoma. As Mr Miles considered the tumour inoperable radium treatment was commenced. By internal and external applications a dose of 6830 mgh was given In November 1915 she was readmitted There was now an ulcerating mass closing the left eye the mass was so friable that it was difficult to keep tubes embedded but by external treatment a dose of 5180 mgh was given During these applications the growth diminished markedly On Feb 1st 1916 the tumour had greatly shrunk and was moveable it had been fixed before. Patient better and stronger and can see normally The condition had so much improved that Mr Miles removed what was left of the growth and further radium treatment was commenced A dose of 4120 mgh was given as a prophylactic against recurrence On Nov 23rd 1916, the growth had disappeared an area of dead bone was visible the skin around healthy Mr Miles could detect no sign of recurrence

CASE 4 —Sarcoma involving lower ribs on right side in a male aged 44 recommended by Mr *Dowden* Admitted May 15th 1916 Duration about 18 months On account of a swelling in the region indicated the patient attended the surgical out patient department of the Royal Infirmary in October 1915, and Mr Jardine scraped the interior of the growth The pathologist reported that the growth was a sarcoma. The growth never went quite away and on April 25th 1916 the patient was admitted *to Mr Dowden s* wards The tumour was now increasing and as Mr Dowden was of opinion that an operation would be an extremely severe one he thought that radium might be tried Over the growth there was a cyst containing blood Radium treatment was now begun Three tubes of radium were inserted into the substance of the growth and a total dose of 7560 mhg was administered On June 14th there was considerable external swelling and discharge On July 20th the external swelling was less but there was more pain The patient reported himself at regular intervals and appeared to be gaining strength for on Nov 21st, 1916 he asked permission to resume his work as a brass finisher This Mr Dowden permitted him to do On Jan 2nd 1917 he was well and hard at work but above the original growth there was a hard tumour mass, which Mr Dowden had noticed before

CASE 5 —Myeloma in a female aged 23 recommended by Mr Dowden History: Two years ago patient complained of a gumboil on the right side of the superior maxilla. Dr Gibbs *found* a growth and recommended her to consult Mr Dowden The latter scraped out the cavity and the pathologist reported the growth to be a myeloma It lay posterior to the superior maxillary bone As a prophylactic radium treatment was recommended a tube of radium was attached to a wire and passed up into the cavity and a dose of 1920 mgh administered This was in October 1915 In February 1916 there was no trace of a recurrence but when the patient reported herself in June 1916, Mr Dowden found that the disease had returned On June 27th Mr Dowden scraped out the cavity and inserted radium tubes at first three but on one coming out only two were kept in A dose of 4400 mgh was now given more than double the dose she was given the first time Precautions were also taken to attempt to maintain the radium in a more effective position Very severe reaction followed with swelling and pain which required constant opiates the tongue and mucous membrane of the cheek being burned In December the patient was much better and on Jan 2nd 1917 Mr Dowden could find no trace of a recurrence

CASE 6 —Sarcoma of cervix in a patient aged 47 recommended by Dr Barbour Admitted July 20th 1916 Duration one year Complains of a bearing-down pain and some discharge On June 26th 1916 the cervix found to be ulcerated by Dr Fordyce was curetted Pathological report sarcoma Dr Barbour examined her on July 20th 1916 and found hard nodules all round the cervix except posteriorly The right ligament was thickened Body of uterus unaffected Hysterectomy unsuitable A dose of 4500 mgh of radium was given Sept 26th 1916 Examined by Dr Fordyce Condition very satisfactory there being no trace now of the indurated nodules but cicatrisation instead Nov 14th 1916 Parts seemed quite healthy no discharge patient much stronger Weight 8 st 13 lb Feb. 1st 1917: The patient was examined and the parts found to be *in statu quo*

CASE 7 —Squamous epithelioma growing from vaginal roof behind and to left of cervix in a patient aged 63 recommended by Dr Orr and Dr W Fordyce. Admitted Oct 16th 1916 There is a soft fungating gangrenous mass of the size of a Victoria plum occupying the above position This was removed by operation and the base of it thoroughly scraped and pure carbolic acid applied Pathologist report: Squamous epithelioma showing marked necrosis Ten days later the mass had grown again to half its previous size very fœtid discharge some necrosis The mass was again removed and radium applied to base and a dose of 4900 mgh administered Jan 11th 1917 Dr Orr writes ' There is to-day nothing to be felt except a cicatrix and the least suspicion of ulceration. perhaps the size of a green pea, at one point of the cicatrix The patient feels and looks well and the result so far is very gratifying "

CASE 8 —Epithelioma of the cervix (An old case.) Patient aged 30 recommended *by Dr* Brewis Admitted July 6th 1915 Complaint of loss of health and reddish brown discharge Cervix widely involved uterus fixed. After curetting a dose of 6720 mgh of radium Sept. 30th Patient much better Pain disappeared Cervical cavity smaller granulations superficial a scraping still showed squamous epithelioma cells Uterus movable. In consequence of pathological report a dose of 1920 mgh was given Feb 3rd 1916 Patient greatly improved looks another woman July 20th 1916 Quite well Uterus shrivelled replaced by granulation tissue Pathologist s report from a scraping Nov 16 1916: Returned to ward complaining of continuous pain in right leg Examined by Dr Brewis under chloroform Cannot feel cervix or body of uterus but to the right there was a hard mass in the position of the broad ligament extending back to the sciatic notch of the bone The mass is a good size and fixed A scraping showed malignant cells A dose of 6,500 mgh of radium was administered • Dec 14th 1916 Rise of temperature Examination showed that the opening to the cavity was blocked A drainage-tube was introduced Jan 15th 1917: A slough came away Temperature still rises but less pain also less and only felt at night. Patient remains in a prostrate condition due to the disease and to the destruction produced by the radium Feb 2nd 1917: Patient remains *in statu quo*

CASE 9 —Chondro fibro-sarcoma in a boy aged 6 recommended by Dr J S Fraser Admitted May 9th 1916 The disease affected the left maxillary antrum causing protrusion of the cheek diplopia, and proptosis Dr Fraser removed as much as was possible of the growth by scraping but fearing that he had not eradicated it consulted with Mr Dowden with a view to the removal of the left superior maxilla Mr Dowden however was of opinion that the case was more suitable for radium Tubes of radium were introduced through an opening into the mouth and a dose of 1440 mgh. administered The patient was examined on Jan 3rd. 1917 by Dr Garretson in the absence of Dr Fraser and he was unable to detect any sign of the disease The boy appears to be perfectly well and is attending school

CASE 10 —Myeloma of the sternum (old case) in a male aged 23 recommended by Professor Gulland Admitted March 9th 1915 Duration two years Growth the size of a large cocoanut adherent to sternum Symptoms weakness and dyspnœa. Consultation with Mr Miles who considered the case inoperable Four radium tubes were introduced by Mr Miles into the growth and radium was also applied externally A dose of 13 200 mgh was administered Within a month of this treatment the growth had entirely disappeared Professor Gulland remarked in regard *to* this case that he had watched the tumour growing during the past 18 months that it was of very large size quite as big as two fists that he had been rather a sceptic as regards the value of radium in malignant disease but that he was now quite converted The growth was a myeloid sarcoma The patient recovered his health and strength and went back to work Six months later a small recurrence appeared over the sternum After a dose of 250 mgh it disappeared but was followed by an ulcer about 1 inch deep extending into the eroded sternum No pain was associated with the ulcer which slowly filled up The patient had a course of iodide of potassium on Mr Miles s advice. The patient was able to continue with his work. On Jan 13th 1916 Professor Gulland wrote This patient had a long course of inunction and of iodide of potassium before the radium treatment but without the slightest effect. The ulcer has impressed *me* more as a continued destruction of the tumour which must have started from the centre of the sternum " The foregoing appeared in last year's annual report The further history is as follows In February 1916 a swelling occurred in the left axilla which was removed by Mr Miles in March 1916 The pathologist s report was the following A difficult growth to classify There is a large amount of well-developed fibrous tissue. The cells have a tendency to arrange themselves in rounded follicles They are polygonal in shape and suggest endothelial cells in appearance and arrangement The condition I regard as a tumour formation belonging to the group of the lymphosarcomata but somewhat anomalous in character " Oct 26th 1916 The ulcer on the sternum is quite healed and the patient perfectly well

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MANCHESTER AND DISTRICT RADIUM INSTITUTE

A report of the work of the Manchester and District Radium Institute (the Royal Infirmary, Manchester) by Dr Arthur Burrows the radiologist to the institute, deals with the period from Jan 1st to Dec 31st 1916, which saw the completion of the first thousand cases presenting themselves with a view to radium treatment during the two years since the institute was started Included in the report in addition to a general table of all the cases which have been treated is a list of all the malignant cases, excepting rodent ulcers which were well at the end of 1916 This list states the time during which the patients have remained free from symptoms or signs of disease No case of carcinoma of the breast was reported as being apparently well at the end of 1915 and therefore in this particular instance, 12 months is the maximum period during which any patient previously suffering from the disease can have been free from symptoms During the year the energies of the institute have been limited to the purely clinical side of its work, but it is hoped that as soon as circumstances permit an increase in the scope of its activities will be possible The physicist Mr Lupton, reports that 777 ordinary emanation tubes, 238 emanation tubes for needles, and 316 flat emanation applicators were made during the past year in the physical laboratory, showing an increase of 251 over the year 1915

A series of cases illustrating interesting points in relationship to radium treatment is given, and two groups of these may stimulate the reader's interest to read the report itself

Carcinoma of the breast —In this instance the best results follow the implantation of an adequate number of emanation tubes in the growth and along the course of the lymphatic vessels In some cases as many as 12 tubes have been buried at one time If the tumour be very firmly fixed to the chest wall the results are not so good, and treatment by implantation must be employed with extreme caution or the breaking down of the growth may produce an intractable ulcer Often it is better not to bury at all under these circumstances, but simply to apply plates externally It is always necessary to convince oneself that the situation and size of the growth give adequate opportunities for local repair If the growth of the breast be too large, it is best to remove it locally and to apply radium at the site of removal and along the lymphatic tract Radium is also most useful in assisting surgeons to operate in border line cases or for the treatment of inoperable glands of the neck Small scattered glands of the neck may be treated by the application of plates or larger masses by the method of burying In the latter instance the results are often most gratifying Small secondary skin nodules often disappear when treated by superficial plates, but their widespread nature inclines one to think that it is likely that X ray treatment would be the best method of dealing with them in the future It is by no means always necessary to produce a severe local reaction in order to remove a malignant growth by radium It is often done without the patient's knowledge that anything is happening at all, and increase of knowledge will, no doubt, practically eliminate the occurrence of a reaction which is a source of discomfort to the patient

CASE 1 —Female aged 72. This patient had a two years history of a swelling of the right breast with the formation of a lump in the right axilla She had only slight symptoms of discomfort. Her surgeon deemed her growth to be inoperable In the upper and outer quadrant of the right breast was a hard mass the size of a hen s egg It was adherent to the skin but could be moved somewhat on the chest wall In the right axilla was a mass of six or more hard glands adherent to one another Slight movement of them in the deep tissues was possible Five radium emanation tubes (each of 20 mc strength and contained in screens of platinum 3/10 mm thick) were buried in the breast (three) and axilla (two) for 24 hours The growth diminished much and treatment was repeated two months later with four tubes Three months later some indefinite thickening remained in the right breast one gland could be felt in the right axilla and one small supraclavicular gland had appeared Treatment was continued by the external application of radium plates screened by 1 5 mm of lead for 24 hours This was repeated six weeks later and seven months after the first application of radium all signs of the growth had disappeared

The above is an example which shows how much perseverance is sometimes necessary Other cases have cleared up more quickly, and it has not been necessary to apply plates

CASE 2 —Female aged 50 In 1913 radical amputation of this patient s right breast was performed for carcinoma. Twelve months later a nodule appeared at the inner end of the scar The nodule gradually grew and eventually broke down and ulcerated When she presented herself with a view to radium treatment she had at the sternal end of the breast scar an elliptical ulcer 3 × 2 cm It was surrounded by a zone of infiltration measuring 1 cm across and its edges were thickened hard and undermined The whole ulcer was intimately united with and fixed to the chest wall In the neck above the inner end of the clavicle was a hard rounded gland the size of a hazel nut It was not firmly fixed No enlarged glands could be felt elsewhere Looking to the nature and situation of the ulcer it was decided that treatment by external plates was the only method available The patient received nine applications of plates of a strength of 2 5 mg of radium to the square centimetre, screened by 6 mm of platinum for 25 hours, both to gland and ulcer an interval of six weeks elapsing between each application At the end of that period both the gland and the ulcer had disappeared leaving no sign of the growth

The above example shows that occasionally a good result may be obtained in an apparently unpromising case by the use of plates alone

Tumours of abdominal muscle —The three cases hereunder noted are all interesting from the point of view of diagnosis and radium treatment The first case is one of true sarcoma of the left rectus, the other two are examples of fibrosis of the abdominal muscles and chronic interstitial myositis respectively The case of sarcoma yielded very slowly to radium treatment while the other two cleared up extremely rapidly

CASE 1 —Female aged 29 In September 1915 this patient came to the Manchester Royal Infirmary for treatment of a hard growth about 15 cm long and 7 cm wide in the upper part of the left rectus abdominis The surgeon made an exploratory incision and a piece of the growth was removed for microscopic examination It proved to be a myxo fibro sarcoma On one occasion three tubes of radium emanation each of a strength of 20 mc. and screened by 1 mm of silver were inserted into the growth for 24 hours A considerable reduction in the size of the tumour resulted It was then decided to continue the treatment entirely by means of heavily screened radium plates applied externally for periods of 25 hours The patient has had nine such treatments and the growth has slowly decreased in size until at present all that can be palpated is a small elongated patch of thickening The treatment has thus been continued over a period of 14 months

CASE 2.—Male aged 42 This patient was operated on by a surgeon with a view to removing the tumour of the abdominal wall occupying practically the whole of the abdominal muscle to the right of the middle line and from the level of the umbilicus downwards At the time a piece of the growth only was removed for section but no further operation was performed The section under the microscope showed extensive fibrosis of muscle which suggested syphilis but the Wassermann reaction was negative Two emanation plates each containing 28 mc of radium emanation and screened by 1 5 mm of lead were applied to the growth for 24 hours Two months later no thickening whatever remained and no recurrence of the growth has taken place although 21 months have elapsed since the treatment was applied

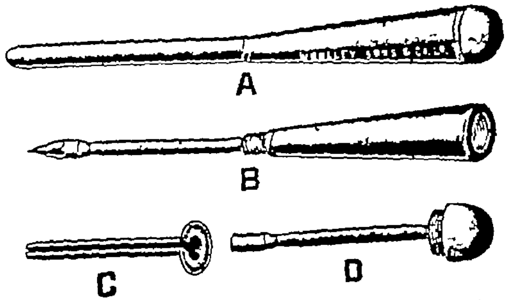
CASE 3 —Male aged 40 This patient came to the Royal Infirmary in January, 1915 He had then five weeks history of swelling of the left thigh and pain down the front of the thigh and leg A large hard fixed growth could be felt in front of the upper part of the left femur It was hard, elliptical in shape and about 15 cm long An exploratory incision was made over the tumour, and three emanation tubes containing 80 mc of emanation were buried in it A piece was removed for microscopic examination The section showed the case to be one of chronic interstitial myositis The growth rapidly became smaller and the patient has now been free of signs and symptoms for nearly two years

The classified results at the end of the year were as follows —

Free of disease at the end of the year	105	Too early to note result ..	34
Improved	317	Prophylaxis ..	20
Not improved	216	Not treated	127
Abandoned treatment	91	Total	1000
Died from their disease	90		

A TROCAR FOR THE INTRODUCTION OF RADIUM TUBES

The accompanying illustration shows an instrument which Dr Arthur Burrows has devised for introducing radium and radium emanation tubes into tumours when there is no danger of perforating important structures It consists of a sharp trocar (B), a cannula with a slot running its whole length (C) and a blunt trocar (D) The sharp trocar and the cannula are thrust into the growth to the required depth, and the trocar is withdrawn in the usual manner The radium tube is then inserted in the cannula, and its silk attachment for withdrawal is slipped into the slot Next the blunt trocar pushes the tube home The cannula is then pulled up along the trocar, and its lower end and the silk are thus completely disengaged, and the trocar and cannula are withdrawn leaving the tube in position The process is quick and practically no scar remains. The component parts of the introducer screw together into a compact whole as in A The internal diameter of the cannula is 3 mm The instrument has been made for Dr Burrows by Messrs James Woolley, Sons, and Company, Limited, of Manchester



Colonel George Henry Barefoot, C B, C M G, A M S, has been appointed a Knight of Grace of the Order of St John of Jerusalem

MEDICINE AND THE LAW

The Supervision of Poisons

THE sentence to various terms of penal servitude of three out of the four persons who were recently charged at the Old Bailey with conspiring to murder two Cabinet Ministers brought to a fitting conclusion a story of rancorous plotting against persons in authority, of perverted ingenuity, and of fatuous recklessness such as we are accustomed to associate with the cruder novel of crime or with cinematograph exhibitions The sheer improbability of many of the events might have led to acquittal if the prosecution had relied only on the reported conversations of the accused, but the discovery in the possession of one of them of substantial amounts of deadly poisons, and the most ample evidence that these poisons had been provided by another of them, placed their individual and combined guilt outside the range of doubt. We do not propose to comment upon the details of the schemes developed by the Wheeldons in their conversations with the detectives whose astuteness, combined, it would seem, with good fortune, brought them upon the spot at precisely the right moment for effective action To do so with any point would be to suggest where the proposals for murder made by the plotters might have failed or been improved. But to one thing we call attention, and not for the first time. The poison in the possession of these persons of dangerous character was deadly if they were skilful enough to use it. The fact that in this instance it might have been employed to strike a shrewd blow at the country's safety should strengthen the hands of magistrates in all cases in which irregularity in the sale of poisons is proved. The regulations governing such sales however strictly enforced, cannot be expected to prevent altogether the obtaining of poisons by the criminal, but they can no doubt, do much to limit the amount thus accessible and to render its acquirement difficult The precautions taken to prevent the surreptitious abstraction of drugs and dangerous substances from hospitals and institutions where they are legitimately stored and handled daily, cannot be expected to prevent all pilfering by persons unfit for the trust reposed in them, but the example of Mason should call attention to the necessity for the rigorous employment of such precautions and more particularly so at a time when assistants are being employed as to whose antecedents and characters there may be no trustworthy information. The element of doubt which is sometimes found in trials where poisons form the subject of expert evidence seemed entirely absent in this case The prosecution had it all their own way, and the notice of appeal which was lodged has been dismissed

The Sale of Arsenic

By an Act of Parliament passed in 1851 (14 & 15 Vict c 13) among the restrictions laid down to regulate the sale of arsenic, it is ordered that no one shall sell it 'to any person who is unknown to the person selling' unless the sale is made in the presence of a third party who is known to both vendor and purchaser In a recent prosecution brought under this Act by the police at Slough against a druggist it appeared that no legal decision has been given as to the interpretation of the expression "unknown." The druggist, who was stated to have conducted his business blamelessly for 17 years, in this case sold a small quantity of arsenic to an Australian soldier whom he had seen going about in the district for about a fortnight and who had previously made a purchase at his shop The soldier had stated that he wanted the arsenic in order to cure a fox skin The druggist observed that it should be mixed with soap for that purpose and on account of the use to which it was to be put sold the small quantity required without mixing it with soot or indigo as ordered by the Act referred to Otherwise the sale was concluded with regularity The soldier was afterwards apprehended as an absentee from his regiment and the arsenic was found upon him When the question came to be argued whether in the circumstances the purchaser of the poison was known or unknown to the vendor it was stated that a stipendiary magistrate at Manchester had held in 1857, in a similar case that the onus of proof lay upon the defendant, while on the other hand at Salford in 1859 the bench had decided that it was for the prosecution to prove that the purchaser was unknown to the druggist The Slough magistrates appear to have taken the view that the sale in the circumstances described constituted a sale to a person unknown to the druggist, for they inflicted a fine of £1 upon that charge and £2 upon a further charge of selling arsenic in less quantity than 10 pounds

A Case for Diagnosis

In a case recently tried at the Brighton county court the question arose whether the plaintiff suffered in the autumn of last year from ptomaine poisoning as the result of eating a pork pie or whether his illness was an attack of gastro intestinal influenza following a visit to a picture house The plaintiff, who had been staying at a home of rest in the neighbourhood, visited a picture house in Brighton and on returning to the station purchased at defendant's shop a pork-pie which he "washed down with a dry ginger" A friend also bought a pie, but according to the evidence only ate the crust, throwing the meat away The friend was not taken ill, but the plaintiff's indisposition necessitated a prolonged stay at the home of rest Two doctors were called to give evidence on each side Judge Mackarness commenting on the medical evidence, said that one thing the four doctors were all agreed upon was that in the absence of an analysis of the excreta it was not possible to speak with absolute certainty as to ptomaine poisoning Unfortunately no such analysis was made. It seemed he said quite possible from the medical evidence that the plaintiff might have developed influenza during his visit to Brighton, but in his opinion the medical evidence pointed to ptomaine poisoning as a very probable cause of the plaintiff's illness. He commented on the fact that there were no other sufferers among the many purchasers from the same shop on the same day, and said that it would not be right that plaintiff's misfortune should be visited on the head of defendant unless the evidence clearly established that the pork-pie was unfit for human food and was the cause of his illness The evidence fell short of that and he gave judgment for the defendant

THE CONTROL OF VENEREAL DISEASES

Approved Council Schemes

REPLYING to a question in the House of Commons on March 12th Mr Hayes Fisher, Parliamentary Secretary to the Local Government Board, stated that 20 local authorities in England had provided facilities for the free treatment of venereal diseases in 28 hospitals. The number of councils whose schemes have been approved by the Board is now 60, the list being as follows —

County Councils —Buckinghamshire Cambridgeshire Derbyshire Durham, Isle of Ely Essex Gloucestershire Herefordshire Hertfordshire Kent Leicestershire County of London Middlesex, Norfolk, Northamptonshire Northumberland Nottinghamshire, Pembrokeshire Peterborough (Soke of) Radnorshire Rutland Salop, Suffolk East Surrey Sussex East, Sussex West Warwickshire, Westmorland Wiltshire Worcestershire, Yorkshire (East Riding)

Town Councils —Bath Birmingham, Blackpool, Bootle Bradford, Brighton Cardiff Croydon, Dewsbury East Ham, Hastings Ipswich, Kingston-on Hull, Leeds Leicester London (City of) Merthyr Tydfil Middlesbrough Newcastle-upon Tyne Northampton Nottingham Portsmouth, Salford, South Shields, Tynemouth Wallasey Warrington, West Ham York.

In the case of Rutland County Council and Blackpool town council full schemes have been submitted but they are at present approved for laboratory facilities only Merthyr Tydfil Middlesbrough and York town councils have only submitted partial schemes for laboratory facilities and supply of salvarsan substitutes, and these have been approved. There remain at present 85 local authorities who have not yet presented schemes, or whose schemes have not yet been approved by the Local Government Board

The Participation of Hospitals

A White Paper issued by H M Stationery Office [OD 8509, price 1*d*] states that between 130 and 140 hospitals in England and Wales have expressed their willingness to participate in the schemes of local authorities, and although in a few instances the authorities of important hospitals have been reluctant to inaugurate during the war any fresh arrangements for the treatment of venereal diseases, this hesitation has already been overcome in some cases The shortage of medical staff and the pressure on the accommodation at most hospitals at the present time have presented obstacles in many instances but the former difficulty has been met to some extent by the Army Council arranging that certain officers of the R A M C, who are specially skilled in the treatment of venereal diseases, should devote part of their time to the work of the clinics provided at general hospitals for the treatment of these diseases

Treatment at Lambeth Infirmary

Mr A L Baly in a report upon the treatment of venereal disease at Lambeth Infirmary, mentions that all the assistant medical officers are trained to administer galyl intravenously and grey oil intramuscularly and during the nine months ended Dec 31st last 395 injections of the former have been given without a single untoward effect In some cases it has been found desirable to give more than three injections of galyl, and the number of patients presenting themselves for mercurial treatment has risen very considerably When desirable, patients are advised to remain in the infirmary until all infective lesions have disappeared, on the other hand, an increasing number of patients are admitted for week ends to receive their injections Very few men suffering from acute gonorrhœa apply for admission When admitted they receive the most modern treatment, but the ward in which they are at present accommodated is of a temporary character In regard to gonorrhœa in the female, many of the cases admitted being already in a confirmed and chronic stage only prolonged and vigorous in patient treatment appears to give satisfactory results The pathological work of the infirmary has grown to such an extent as to occupy the whole time of one of the assistants, who is an expert pathologist Mr Baly suggests that examination for specific organisms should be made in the infirmary laboratory, as well as the Wassermann reactions for examinations made for diagnostic purposes in connexion with tabes, cerebral syphilis aneurysm, and other late manifestations, and a grant claimed in respect of infective cases For the purpose of claiming Government grants, he says —

> It may be necessary to compile records showing the number of days during which patients are maintained in the infirmary suffering from venereal disease during the infective stage apart from their maintenance for any other cause or for a continuation of their treatment after the infective stage has passed I propose this should be done by keeping a special index card which will show (1) date of admission (2) the date on which in the medical officer s opinion the patient ceased to be infective; (3) the number of days so maintained I suggest that the latter date (2) should be determined by the cessation of any infective discharge and the healing of all infective lesions and in the case of gonorrhœa when the gonococcus can no longer be found by microscopic examination I propose that the guardians should claim a grant under the following conditions (i) Primary syphilis (ii) all recognised secondary syphilitic conditions (iii) rupia (iv) congenital syphilis when associated with infective lesions (v) all forms of gonorrhœa, excluding ophthalmia neonatorum in which an infective discharge is present as demonstrated by the presence of the gonococcus

The Cooperation of the General Practitioner

In connexion with the public provision for diagnosis and treatment of venereal diseases, the Local Medical Committee for the County of London calls attention to the new clause which has this year been added to the panel practitioner s agreement —

> Where the condition of the patient is such as to require services beyond the competence of an ordinary practitioner the practitioner shall advise the patient as to the steps which should be taken in order to obtain such treatment as his condition requires and shall where provision is made for such services in or for the area by any public authority after consultation with the Local Medical Committee and due notice of such provision has been given to the practitioner by the Insurance Committee take such other steps as may be reasonably necessary in order that the patient may derive full advantage from the provision of such services Provided that where, for the purpose of defining the duties of practitioners as aforesaid a scheme has been prepared by the Panel Committee in consultation with the Insurance Committee and approved by the Commissioners the provision of any such scheme shall be deemed to be part of the agreement and shall be substituted for this clause

As the public provision now made is available for every member of the community and general practitioners can assist their patients to derive full advantage from the provision by drawing their attention to the times of attendance at the various hospitals, the Local Medical Committee does not consider it necessary, at any rate for the present, for the Panel Committee to put forward any such scheme. On the other hand, the Local Medical Committee emphasises the need for individual judgment —

> At the outset every practitioner should recognise his individual responsibility to exercise his own personal judgment with regard to the nature of any form of treatment to which he advises or encourages his patient to submit. A practitioner cannot send a patient to special clinics with a definite expectation that any particular form of treatment such for example as injections of salvarsan shall be adopted It must rest with the member of the staff responsible for the case to use his own judgment as to the general value of salvarsan or any similar drug and as to its applicability in the particular case In the same way the authorities of the hospital in referring a case to a general practitioner cannot dictate the form of treatment to be applied The general practitioner must exercise his own discretion as to the form of treatment which in his hands he believes will be most beneficial to his patient.

The Local Medical Committee emphasises the fact that salvarsan is on its trial, and that those who are making the freest use of it differ amongst themselves as to the indications for its use, its mode of administration, its dosage, and its dangers, and adds that it would be greatly to the public interest if the Medical Research Committee were able to make investigations into some of the difficult questions connected with the limitations of the use of salvarsan and the trustworthiness of the Wassermann reaction and to issue a report thereon The Local Medical Committee considers that it is the duty of every practitioner to take such opportunities as may be available of learning at first hand from those with large experience the details of the modern treatment of syphilis and that no blame can possibly be attached to a practitioner who, having given careful consideration to the requirements of a patient under his care, decides not to adopt or recommend any particular form of treatment

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be Temporary Surgeon William F W Betenson.

The following appointments have been notified :—

Fleet Surgeons : J D Hughes to Devonport Dockyard W R. Trythall to *Téméraire* and A R Schofield to *President* additional

Staff Surgeon : G T Verry to Southampton

Temporary Surgeons : B W Dakers to *Pembroke* additional H S Brown to R M Depôt, Deal E. H Hugo to Gibraltar and W F W Betenson to *Victory* additional for Haslar Hospital

ARMY MEDICAL SERVICES

TERRITORIAL FORCE

Major H A Howes to be Deputy Assistant Director of Medical Services

ROYAL ARMY MEDICAL CORPS

Majors relinquishing the acting rank of Lieutenant-Colonel on re posting : J Fairbairn R P Lewi

Major J W West to be acting Lieutenant Colonel whilst commanding a General Hospital

To be acting Lieutenant Colonels whilst commanding a Field Ambulance : Major J Powell Capts (acting Majors) P G M Elvery G F Rudkin C L Franklin A D O Carroll G H Stevenson P S Tomlinson B Johnson E M. Middleton and Temp Capt. (acting Major) C V Bulstrode

TERRITORIAL FORCE

Major H A Howes is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services

Lieuts J Fraser and H W Beedham to be Captains G Bryce to be Lieutenant

TERRITORIAL FORCE RESERVE.

Lieut. Col J T R Wilson, D S O from Royal Scots to be Lieutenant-Colonel

Capt A Findlater D S O, from London Mounted Brigade Field Ambulance to be Captain

VOLUNTEER FORCE

E J Wood 5th Battalion Kent Volunteer Regiment to be temporary Lieutenant and Medical Officer

E Ellis 8th Battalion Yorkshire West Riding Volunteer Regiment (late Second Lieutenant 1st V B West Riding Regiment), to be temporary Lieutenant and Medical Officer

G Hollies 1st Battalion Shropshire Volunteer Regiment (late Lieutenant-Colonel R A M C) to be temporary Captain and Medical Officer

T W *Dewar 2nd Battalion* Perthshire Volunteer Regiment, to be temporary Lieutenant and Medical Officer

SERVICE NEWSPAPERS AMALGAMATION

The *Army and Navy Gazette* and the *Broad Arrow* will on April 21st be incorporated under the one title. *The Army and Navy Gazette the Broad Arrow and the Naval and Military Gazette.*

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS

The March issue of this journal opens with an analysis by Colonel Sir William B Leishman and Major A B Smallman of Recent Cases of Tetanus in the British Expeditionary Force with special reference to their treatment by antitoxins Some of the tables illustrating the article are remodelled upon those adopted by Sir David Bruce in an article published in THE LANCET of Dec 2nd, 1916 p 929 and "they may be read as complementary one to the other and may in this way serve to bring into greater relief the points in which the experience of home hospitals are in contrast or in accord with those acquired in the Expeditionary Force " In the reprint of a paper on Neurasthenia and Psychasthenia, read before a Conference of Medical Officers at Malta in November last, Colonel Howard H Tooth essays to define the limits of neurasthenia and the true stigmata of the disease in order that the real neurasthenic may be justly appreciated on the one hand and that the Army may not be unduly depleted on the other The Nitrogenous Food Requirements of Some of the Commoner Pathogenic Bacteria is the subject of an article by Lieutenant-Colonel M H Gordon, and the joint inquiry by Lieutenant-Colonel C M Wenyon and Captain F W O Connor into problems affecting the spread and incidence of protozoal infections of British troops and natives in Egypt with special reference to the carrier question is continued

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Lieut D R Kharas, I M S
Capt M R Hughes, Australian A M C

Drowned

Capt G L Atkinson R A M C, was a student of King's College, London, and qualified in 1896 He held appointments at King's College Hospital and at the Victoria Hospital for Children, Chelsea, and was in practice at Hampton Hill, Middlesex, prior to joining the R A.M C

Died

Lieut Col M J Whitty, R A.M C, qualified at the Royal University of Ireland in 1885, and shortly afterwards joined the Army Medical Service, from which he retired in 1906 He was later re-employed as medical officer to the Liverpool recruiting area, and died at Liverpool on March 28th

Wounded

Lieut Col W Egan, R A M C
Capt M A Nicholson, R A M C
Capt A B Chapman, Canadian A.M C
Capt A. C Falkiner, R A M.C

DEATHS AMONG THE SONS OF MEDICAL MEN

The following sons of medical men must be added to our lists of those who have fallen during the war —

Second Lieut H F Johnson, East Kent Regiment (The Buffs), only surviving child of Dr G L Johnson, of Hampstead, London, and Johannesburg, South Africa
Lieut J S R Hodgson, Dorset Regiment, elder and only surviving son of Dr H Hodgson, of Alresford, Hants
Second Lieut V F H Hugill, Royal Fusiliers, attached Royal Flying Corps, only son of Dr G F Hugill, of Balham, Surrey

MENTIONED IN DESPATCHES

The name of the following medical officer should be added to the list of names published in THE LANCET of Feb 3rd, 1917 p 201 —

Temp Capt E P Satchell, R A M C

THE REVIEW OF MEDICAL EXCEPTIONS

The Military Service (Review of Exceptions) Bill, which passed the House of Commons on Tuesday last, will give the Army Council the right of requiring disabled and previously rejected men to present themselves for examination This will throw a prodigious amount of fresh work on medical boards, who will require every possible assistance in the carrying out of a difficult task. The use by the boards of certificates from civil practitioners has been discussed, and it has been felt in some cases that personal bias has been shown leading to the exception of a man who was really fit to serve It must be remembered, however, that in many instances it is difficult for a medical board to come to a fair conclusion without a reliable clinical history of the man in question, which can only be given by his regular medical attendant In doubtful cases it would probably be wise to give medical boards power to detain an examinee under observation in a special or military hospital for a short period Such a course might be found especially useful in conditions such as doubtful cases of pulmonary tuberculosis, slight cardiac weakness when no murmurs are present, difficulty in distinguishing between functional and organic affections, and when malingering (including doping) is suspected The advantages gained would be similar to those of the observation beds in an infectious hospital or the casualty department of a general hospital—viz., the avoidance of overlooking serious disease not recognisable as such at first sight and on the other hand of attaching undue weight to transient and unimportant symptoms This course would thus in some instances prove of great advantage to the man and in others to the Army]

OBITUARY OF THE WAR

MALDWYN LESLIE WILLIAMS, M B, B S MELB,

LIEUTENANT COLONEL, AUSTRALIAN ARMY MEDICAL CORPS

Lieutenant-Colonel M L Williams, who died of wounds in France on March 3rd at the age of 31, was one of the best known among the younger men of the medical profession in Victoria After matriculation he entered Trinity College, Melbourne, and had a distinguished career as a student, graduating with honours M.B, B S, of Melbourne University in 1908, and obtaining an appointment on the resident staff of the Melbourne Hospital in the following year He was subsequently medical superintendent to the Bendigo Hospital, relinquishing this appointment to commence private practice in Bendigo On the outbreak of war he volunteered for active service and was appointed major to an Australian field ambulance which served in Egypt and France He was later promoted lieutenant-colonel and placed in command of another field ambulance, with which he was on duty when he received the wounds from which he died

Colonel Williams made many friends during his University career He gained his football blue and represented Melbourne in Inter University matches His loss will be keenly felt by a large circle who regarded him as a man of much promise in the medical profession He leaves a widow and two children

SAMUEL W HEWETSON, M D QUEBEC,

LIEUTENANT COLONEL, CANADIAN ARMY MEDICAL CORPS

Lieutenant-Colonel S W Hewetson who died at the Royal Free Hospital London, from perforative colitis, was officer in command of the 8th Canadian Field Ambulance He was born in November, 1872, at Kincardine Ontario, entered the medical school of McGill University where he was a brilliant and popular student, and graduated in 1893 Unfortunately, soon after graduation tuberculosis showed itself, and he became a patient under the late Dr Trudeau at Saranac, remaining, as did so many of Dr Trudeau's medical patients, to be one of his enthusiastic assistants at the sanatorium Readers of his autobiography published last year will recall Trudeau's warm words of appreciation of Dr Hewetson and his services His malady led him eventually to settle in the highlands of Alberta, at Pincher Creek whence, after a few years, when his health was thoroughly re established, he moved to Calgary, becoming there a popular practitioner For many years he had been an active member of the Canadian Militia, his majority in the Army Medical Corps dating from 1910 With the beginning of the war he was appointed A.D M S of the Alberta district Attached first to the 13th Canadian Mounted Rifles in January, 1916 he organised the 8th Canadian Field Ambulance, of which he was placed in command proceeding overseas to France in the spring of the same year Lieutenant-Colonel Hewetson was married, his wife having predeceased him

HERBERT JONES, M D ONTARIO,

MAJOR CANADIAN ARMY MEDICAL CORPS

Major H Jones the news of whose death overseas has been received, was born in September, 1871, taking up his medical studies at a comparatively late period and graduating from Toronto University in 1904 He then settled in practice in Hamilton Ontario After the outbreak of war he joined the 5th Canadian Field Ambulance as captain and showed himself an excellent officer, gaining his majority in November, 1915 after several months of work at the front His death was due to pneumonia, which proved fatal after a brief illness

HUGH BARR, M D GLASG, D P H,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain H Barr who fell in action in Greece on Feb 21st at the age of 35 years was born in Paisley receiving his early education at the Grammar School there It was characteristic of him that, even as a student he had decided definitely on what was to be his life s work in medicine, and it was with the view of acquiring a sound knowledge of medicine preparatory to embarking on the study of public health that several of the years immediately following graduation were devoted by him to hospital practice in England Having obtained the diploma of Public Health, he visited Germany, where he studied bacteriology under Professor Dunbar at Hamburg, soon becoming fluent in the language Going to New Zealand about 1910 largely on account of his health, he quickly built up there a large practice, which he relinquished to accept a commission in the Royal Army Medical Corps At the end of a year s service in hospital at Salonika he returned to Scotland for a short time, being then sent to Greece His term of six months, during the latter part of which he was attached to an ambulance train, he had almost completed when he met his end

A friend who knew Captain Barr intimately speaks of him as one whose cheerfulness and ready wit could not but enliven the dullest company His mind was always active, and in its interests not confined to medicine alone His knowledge of sociology and philosophy was considerable, and extensive travelling served further to broaden his outlook His many friends can ill spare his companionship

JOHN MAXIMILIAN HAMMOND M B , B S LOND ,

LIEUTENANT ROYAL ARMY MEDICAL CORPS.

Lieutenant J M Hammond, who died on Feb 12th of wounds contracted on active service at the age of 41, was son of the late Henry A Hammond, of Bournemouth He studied medicine at Bristol University College and St Bartholomew's Hospital, London, qualifying in 1908 and holding resident appointments at the West London Hospital In 1911 he started in practice at Bournemouth, becoming medical registrar to the Hahnemann Home, relinquishing this work in the autumn of 1914 when he volunteered to go out to the English section of the French Military Hospital at St Malo Last July he was given a commission in the R A M C , sailing for Salonika in August attached to the Devonshire Regiment He was wounded by a shell during an attack on the Bulgar lines, and did not long survive an operation

A colleague writes of Lieutenant Hammond as a man who stood over 6 feet high, and of whom largeness was the prevailing characteristic "Large hearted, he was always ready to do a kindness to others Nothing was a trouble, no detail too small to receive attention At St Malo, besides treating the wounds of the *poilu*, he ministered to their souls, and with his perfect knowledge of French many was the death bed soothed by *le grand Anglais*" Fellow officers from the Macedonian front bear testimony to his good influence on the morale of the men In the end it would seem that he gave his life for them "I found I had lost my tourniquet," he says, in a letter received since his death, but the missing tourniquet was doubtless doing service to some wounded man whom he had recently tended

SYDNEY DOMVILLE ROWLAND, M A CAMB , M R C S ENG

MAJOR, ROYAL ARMY MEDICAL CORPS

Major S D Rowland, who died of cerebro-spinal fever on March 6th, was the son of the Rev W J Rowland and was born in 1872. He was educated at Berkhampsted School and Downing College, Cambridge, where he held a natural science scholarship, finishing his medical studies at St Bartholomew's Hospital in 1897 Clinical medicine did not appeal to him, and at the end of the following year he joined the staff of the Lister Institute as assistant bacteriologist, remaining attached to that institution until his death His first investigations dealt with the structure of bacteria and the enzymes in expressed cell juices, then with the late Dr Allan Macfadyen he was engaged on a long research on the juices obtained by grinding up bacteria at the temperature of liquid air In 1905 he went to India as a member of the commission for the investigation of plague, and took an important share in making out the relationship of plague bacilli to fleas and in establishing the part played by the rat flea in the dissemination of the disease On his return to England he worked on problems of plague immunity, publishing a number of valuable papers concerned chiefly with the fundamentals of prophylactic inoculation On the outbreak of war he joined the R A M C and went to France in October, 1914, in charge of the first mobile laboratory Recently he worked at meningococcus carriers, and was thus engaged when he himself succumbed to an attack of cerebro spinal fever

Major Rowland s colleagues speak of him as an exceptionally skilled mechanic whose ingenuity in getting over the technical difficulties of experimental work was of the greatest service to himself and his fellow workers His command of microscopical manipulations was also much beyond the ordinary level 'He was interested in almost everything took the cheeriest zest in life, and was never afraid of his imagination Impulsive, erratic generous to a fault, he was deeply loved by his friends '

THOMAS WILLIAM JONES, M D , D P H LIVERP ,

LIEUTENANT ROYAL ARMY MEDICAL CORPS

Lieutenant T W Jones who was killed in action on or about March 10th, at the age of 31 years, had a distinguished career as a student at Liverpool University, winning four of the five scholarships open to him—viz , the Gee Entrance Scholarship, the Junior and Senior Lyon Jones Scholarships and the University Scholarship in Medicine He was also Holt medallist and prizeman in midwifery He graduated M B , Ch B , with first-class honours, in 1908, taking his M D in the following year, and subsequently the diploma of Public Health For a year he held the Ethel Boyce Fellowship of the University After holding various resident appointments and the demonstratorship in obstetrics at the University he was appointed in December, 1912, medical officer of health for the rural district and

borough of Wrexham, and medical officer to the Wrexham education authority At the outbreak of war he was amongst the first to volunteer for service in the Royal Army Medical Corps, and although his authorities were willing to release him, it was not until November, 1916, that the Local Government Board consented to his accepting a commission. He left for France in December and in February became attached to the Northumberland Fusiliers He met his death whilst rendering assistance to a wounded man who was unable to take cover from shell-fire

As a public official Lieutenant Jones enjoyed the confidence of his colleagues The chairman of his health committee at Wrexham bears witness to his excellent work in progressive sanitation and laments the tragic termination of a career which would have benefited the public health service of the country Others speak of his duties discharged with thoroughness and efficiency, as well as with a tact which commended him to all his associates Lieutenant Jones leaves a widow and a little daughter

CECIL FRANCIS UMNEY

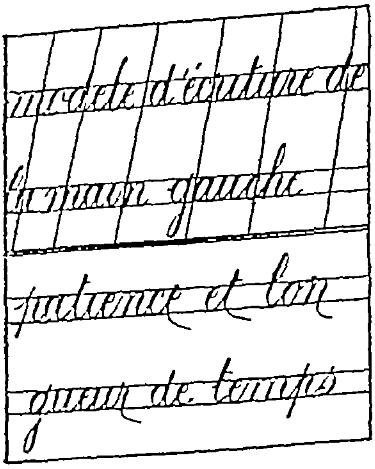
Second Lieutenant C F Umney, Dorset Regiment, who was at first reported missing but is now known to have been killed in action on Sept 26th last, was elder son of Dr W F Umney, of Sydenham. After matriculating at London University he was apprenticed to Mr W H Martindale manufacturing chemist, who writes of him as a cheerful and hard worker showing great promise in his work ' His disposition was one of the brightest, and all with whom he came in contact could not fail to like him "

EDUCATION OF THE LEFT HAND OF DISABLED SAILORS AND SOLDIERS

Dr C W Hutt writes to us in the hope that the following account may inspire further effort to assist the men in our naval and military hospitals and convalescent homes who have lost their right hand in acquiring in as short time as possible such a use of their left hand that they may in but small measure feel handicapped by their loss

At the Ecole Professionnelle de Blessés at Montpellier, since July 1915, M Tamenne, a Belgian refugee has been teaching disabled men how to use their left hands Having lost his right fore-arm when 16 years old he has so re educated his left hand that he is almost unconscious of his loss He needs no assistance to carry out the small operations of daily life he can shave himself, button collars, tie his tie and bootlaces, cut up meat, peel fruit, roll cigarettes, and get on a bicycle quite as well as a man with two hands In addition he has learnt and is able to teach writing shorthand and typewriting with the left hand only Convalescent men from the military hospitals at Montpellier needing this instruction attend at the school from 2 to 4 daily in the afternoons, some 132 have now passed through the course

FIGS 1 AND 2



The exact mode of instruction of the left hand in the operations of daily life was recently set forth in THE LANCET,[1] in an abstract of the experiences of Count Zichy, a Hungarian who losing his right arm when 14 years of age from the accidental discharge of a sporting gun, taught himself the greatest possible use of his other hand

M Tamenne, through the agency of my friend, M Edmond Dronsart Directeur Technique de l'Ecole has kindly sent me a detailed account of his method of teaching hand writing He places considerable emphasis on the men learning to write in a hand resembling as closely as possible their former handwriting This, he holds contributes in a large degree to the men losing the habit of thinking themselves as disabled or handicapped in any way To this end the writing taught has the same slope as ordinary writing, not even upright writing is allowed The position of the body is the same as when writing with the right hand, the desired slope is obtained by the position of the fingers and of the paper To write with the left hand, he says, the man should—

(1) Place his forearm comfortably on the table so as to fatigue the hand as little as possible

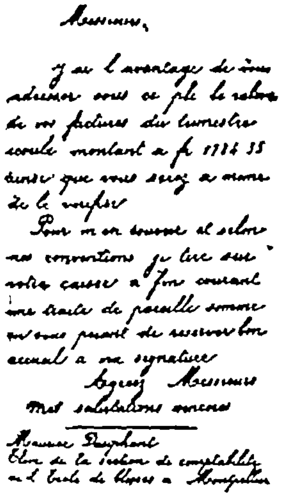
(2) Practise writing between lines about 3 5 millimetres apart

(3) Place the paper in the sloping position shown in Figs 1 and 2

(4) Try from the very beginning to give the usual slope to the letters If this proves too difficult he should draw faint lines in an oblique direction as shown in Fig 1 and endeavour to make the up- and down strokes of the letters come parallel with these lines

(5) Always take care that the hand is immediately below the point where he is writing

The man will find the last two rules difficult to carry out and the efforts to do so will tire his hand, he should leave off for a few minutes and then resume his attempts After about nine or ten lessons of an hour and a half this trouble disappears and the man is able to form the letters easily and well, the movements of the hand become more and more precise During the next 12 or so lessons he should practise writing between lines about 2 5 millimetres apart, when the letters will be the size used in ordinary writing, later, paper with single lines should be used A mistake some of the men make after five or six lessons is to try to rush their learning, with the result that they form the letters badly and lose the ground already gained Speed in writing can only be acquired with practice and time M Tamenne finds that if a man practises for more than a limited time each day he loses interest and does not do so well in the end



Copy of writing of a discharged soldier who has attended the course. His right arm is paralysed

At first the movements of the hand are uncertain but care should be taken that the letters are written as much as possible in their usual form, from the moment the man takes up his pen to the end of the last word It often happens in the formation of the last letter in a word that owing to failure of attention the pen travels below the line (See Fig 2) Patience is necessary from the start, the man must not want to get on too fast, a lesson of an hour and a half is enough for the first ten days At the end of this time the man may practise for an hour to an hour and a half in the morning and for the same time later in the day, until the time comes when he no longer experiences any fatigue during writing After two months' tuition the men are able to take their place in the commercial class ("section de comptables") and carry on as well as right-handed men This work is in a way analogous to the attempt to make children ambidextrous M Dronsart has had experience of work on these lines among elementary school children, and has found that the results obtained are not proportionate to the efforts entailed But one great factor present in disabled men is lacking in these children—necessity

At Queen Mary's Hospital for Limbless Sailors and Soldiers at Roehampton men are being taught writing with the left hand Anyone desiring to help our disabled men "se gaucher" could obtain there useful information, or better still, they should try to find a M Tamenne

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THE NATIONAL RUMANIAN RELIEF FUND —Sir William H Dunn Lord Mayor of London and honorary treasurer of this Fund, has issued an appeal for money to provide Rumania with Red Cross equipment and to relieve distress among the civilian poor He points out that the medical services of Rumania are quite inadequate to deal with the rush of wounded now pouring in to the already crowded hospitals The address of the Fund which is under the patronage of Queen Alexandra and of Queen Marie of Rumania, is 30, Bishopsgate street, E C 2

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[1] THE LANCET 1916 ii 231

THE PARIS CONFERENCE ON THE WAR CRIPPLE —We have received from M L de Paeuw, Secretary General of the Franco-Belgian Organising Committee, a programme of the important inter allied conference to be held in Paris on May 8th at the Ministry of Labour The conference is being called to consider occupational re education and all the questions which interest the war cripple Of the five sections, the first is devoted to physical re education, the second to occupational re education, the third to the placing of the cripple in agriculture and industry, the fourth to his economic and social interests, and the fifth to the special needs of the blind and the deaf Contributions to the discussion are solicited from all who have special knowledge, and correspondence is invited with the Secretary General at 1, rue du Bocage de Bléville, Havre

CANADIAN ACCOMMODATION FOR CONVALESCENT SOLDIERS —A Canadian correspondent writes "The Canadian Military Hospitals Commission announced on Feb 19th that there is now available in Canada accommodation for 2955 convalescent soldiers There are established a chain of 29 institutions stretching across Canada from Halifax to Vancouver Accommodation is also in sight for an additional 2200 as follows Whitby (Ontario) Hospital for the Insane, 750, Guelph (Ontario) Provincial Prison Institution, 500, Halifax (Nova Scotia) main building, Dalhousie University, 200, Winnipeg old Agricultural College, 600, Saskatoon (Sask) Y M C A, 150 The actual number of convalescent soldiers under the care of the Commission on Feb 2nd, 1917, was 1930 besides 105 in other hospitals, and 1021 out-patients There is also accommodation for 820 cases of tuberculosis in 13 sanatoria, and accommodation for 544 in preparation The actual number of patients now in sanatoria is 394 A clearing hospital for 550 men has been provided at Halifax and accommodation for 2225 more is being prepared at Montreal, Kingston, St John, Halifax, Toronto, and Winnipeg With a view to future needs accommodation has already been secured for 1589 in 19 hospitals from Quebec to Victoria, B C The total accommodation for bed cases will thus be 4364, to which 730 may be added by transferring four of the convalescent institutions to the 'active' class The total accommodation available or in sight for all classes is 10,683, inclusive of the Quebec clearing depôt, where there is room for 600"

GLASGOW AND MEDICAL MOBILISATION —At a meeting of the registered medical practitioners of Glasgow and the West of Scotland, held in the Faculty Hall on March 27th, under the auspices of the Royal Faculty of Physicians and Surgeons of Glasgow, questions arising out of the need of the Army for more doctors were discussed Dr Ebenezer Duncan President of the Faculty, was in the chair Dr McGregor Robertson's motion "that this meeting is of opinion that the time has come when the whole nation should be mobilised for the successful and rapid conclusion of the war, so that all fit persons shall be liable to be called upon by the Government to render such service in naval, military, and civil departments as they may be deemed suitable for, due regard being paid to age, training and circumstances," was unanimously adopted, as well as a further motion expressing the opinion (of the meeting) "that to compulsorily mobilise the medical profession in advance of the rest of the community would be unjust alike to the profession and the community at large" A motion proposed by Dr Charles Robertson, to the effect "that the committee to be appointed by the Government in the event of the mobilisation of the medical profession shall supersede the Scottish Medical Service Emergency Committee, and shall contain a majority of medical practitioners in active general practice," was carried by 45 votes to 42.

GENERAL HOSPITAL, BIRMINGHAM —The 137th annual report is issued with an appeal for an additional income of £7000 per annum to meet the greatly increased cost of all necessaries The number of in patients treated in 1916 was 5562, distributed as follows civilian 5230, military 332, an increase of 146 over the previous year, the daily average number in the hospital being 341, or an increase of 25 over the average of the past five years The number of children receiving treatment as in patients was 1001, of whom 214 were under two years of age The total income for the year, including special donations and grants from the War Office was £32,033 as against an expenditure of £38,811, thus leaving a deficit of £6778

Correspondence.

"Audi alteram partem"

THE CLOSURE OF COLOTOMY OPENINGS

To the Editor of THE LANCET

SIR —My paper on this subject in your issue of March 10th has called forth a number of letters—the best compliment that could be paid to it—which clearly show there is as yet no general agreement among surgeons as to the best method of closing colotomy openings

Mr Bernard Roth considers that his method of closing a colotomy, described in his letter of March 17th, is simpler than those I suggested, but it is difficult to see why I should have thought it was much more complicated, but apart from this, a serious objection to it is that the bowel has to be divided within the abdominal cavity, a practice which all abdominal surgeons, I think, agree in considering bad Mr Sinclair White and Mr Percival Cole both prefer Greig Smith s extraperitoneal method of closing a colotomy opening I am well acquainted with this method and have used it a number of times in the past, but I thought it was now quite dead or I should have mentioned it in my paper It appears to me to belong to the same category as lumbar colotomy and to the time when surgeons were afraid of opening the abdominal cavity What is the objection to opening the abdominal cavity? Mr Sinclair White himself says, "Every now and then the parietal peritoneum has been punctured but in no case has this made any difference" Why not then open it deliberately instead of attempting to do the operation extraperitoneally? The extraperitoneal operation is very liable to leave a weak place in the abdominal wall, and many patients have subsequently to wear belts It also leaves a condition which is not normal and is liable to cause trouble later While Greig Smith's operation may possibly be quite justifiable in old people, it is certainly unsuitable for young men wounded in the war, who have a strenuous life in front of them, and I cannot see that it has any advantage over straightforward resection and suture

My object in writing my paper was to describe (1) the easiest, and (2) the best methods of closing a colotomy There can, I think be no doubt that the enterotome method is by far the easiest, and it undoubtedly gives excellent results I have never known peritonitis follow its use, and Mr Paul, of Liverpool, who used it extensively, has not, I believe, recorded a failure with it[1] Although it is open to some of the same objections as Greig Smith's operation, it has the advantage that it involves no narrowing at the line of union and no extraperitoneal bowel There can surely be no doubt that the best method is that which restores the colon to its normal condition—namely, resection and direct suture I am surprised to hear that temporary colotomy is a common operation in civilian practice and is performed as a routine in cases of cancer of the colon unaccompanied by obstruction Why are surgeons so shy of primary resection and suture of the colon that they subject their patients to three operations where one would do? In cases of cancer of the colon accompanied by obstruction there can be no doubt as to the necessity of a temporary colotomy, but this seems an altogether unnecessary procedure in cases unaccompanied by obstruction unless other factors are present which contra indicate immediate resection and suture

After having used all the older methods, I now always perform immediate resection with end to-end suture in suitable cases and have not had a single failure to date I see Mr Finch has doubts as to the safety of getting the patient's bowels open on the second day Let me assure him that one of the secrets of success with anastomosis of the colon is not keeping the patient constipated. Flatus in the bowel is far more dangerous than a little liquid fæces The one thing to avoid is the presence in the neighbourhood of the anastomosis of masses of hard fæces and the consequent necessity for drastic purgatives If the bowels are kept acting daily by small enemata or small doses of salts the risk of leakage is greatly reduced and the colon is kept clean from accumulated and infected blood clot

I am, Sir, yours faithfully,

P LOCKHART MUMMERY, F R C S

March 31st 1917

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[1] Brit Med Jour, July 27th 1912

THE LUMLEIAN LECTURES ON HEART DISEASE

To the Editor of THE LANCET

SIR,—When a few years ago Sir James Mackenzie, in a public lecture, accused physicians in general, and my teachers in particular, of preaching nonsense I passed the matter by as possibly explicable by his ignorance of what was taught in English schools, but now Dr G A Sutherland repeats the same inaccuracies, I feel bound to protest in the name of fair play and truth, and with your permission would criticise a few of Dr Sutherland's mistakes

The function of the heart, as taught to me by Sutton and Clark, was not one only—viz, that of contractility—and they were as well aware as Dr Sutherland that it had four chambers which under pathological conditions did not work harmoniously They knew a good deal about its rhythm, excitability, and tonicity as bearing on clinical medicine I would suggest that their cardiac tonics did reach the heart and so let us hope Dr Sutherland's do, or his treatment must be very feeble Valvulitis Dr Sutherland mixes up in a most casual way with the *effects* of an old endocarditis but whatever he may mean by it Sutton and Clark never taught that prognosis and treatment were based on the valvular lesion present If Dr Sutherland ever evolved from his own inner consciousness the idea that valvulitis is the central factor in heart disease it has naturally misled him, though he may still find infective endocarditis a condition that will demand a good deal of attention

Where did Sir James Mackenzie (supposing Dr Sutherland to have got it from him) get the idea that it was taught that back pressure was the *cause* of heart failure? I am sure we were never taught any such foolishness, we were taught, and I still believe it to be true that failure of the heart causes venous congestion and this in turn interferes with the function of many organs—stomach, liver, kidneys, &c The disappearance of the *presystolic murmur of* mitral stenosis was well known and was ascribed to failure of the left auricle and I still believe this is true

Perhaps after the delivery of his lectures Dr Sutherland may have time to read the late Sir A Clark's paper on Cases of Bruits without Heart Disease and Dr Sutton's Lectures on Pathology, they might save him a good deal of trouble and enable him to give more time to what is true and new instead of disseminating an inaccurate representation of what is old.—I am Sir, yours faithfully,

Harley-street, W March 21st, 1917 FRED J SMITH

PS—Of irregularity and its effects or lack of effects clinically Clark and Sutton knew as much as we do now, and tried to teach us

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MACROSCOPIC *VERSUS* MICROSCOPIC AGGLUTINATION TECHNIQUE

To the Editor of THE LANCET

SIR—In a note in THE LANCET of Feb 17th on the effect of pyrexia on inoculation agglutinins Lieutenant G Selby Wilson, in carrying out a series of tests by the microscopic and macroscopic methods, finds that the latter gives very much higher readings than the former—that the macroscopic method is, in fact, about 30 times as sensitive as the microscopic

This marked disparity is, in my opinion, due to the different conditions under which the two series of tests were conducted and to the very different standard which he takes as the "end point" by the two methods The microscopic tests were conducted at room temperature, and the time-limit was half an hour

In his description of the macroscopic technique he does not give particulars as to temperature and time limit, but as the technique was stated to be Dreyer's, we may assume that the tubes were kept in a water bath at 55° C for two hours Thus, in three respects the macroscopic tests were at an enormous advantage over the microscopic tests—viz (1) longer time limit, (2) higher temperature, and (3) more intimate admixture of serum and emulsion by the convection currents set up in the agglutination tubes when these are placed in the water bath at 55° C All these factors especially the third facilitate the union of agglutinin with agglutinable substance and in that way make the method more "sensitive" Another factor in producing the marked disparity between the microscopic and macroscopic techniques in Lieutenant Wilson's results is that his end point by the former method is practically *complete agglutination* while his end point by the latter method *is a trace of agglutination*

If Lieutenant Wilson will conduct a series of comparative tests in which the conditions are more nearly comparable, he will find the results by the two methods more nearly coincide By removing part of the contents of the last tube which shows macroscopic agglutination for examination under the microscope, he will find agglutination microscopically—otherwise the macroscopic appearance of agglutination in that dilution amounts to an optical delusion And occasionally the first *negative* dilution macroscopically will, under the microscope show a *trace of agglutination*

The advantages of the macroscopic method are so obvious, and so well known to those who have used both that it seems hardly necessary, when comparing the methods, to do so under circumstances so unfair to the microscopic method

I am, Sir, yours faithfully,

R P GARROW M D,
Captain R A M C

Egypt, March 12th 1917

EXCISION OF THE RETRO-PHARYNGEAL GLAND

To the Editor of THE LANCET

SIR—Mr Norman Patterson's communication in your issue of last week is of interest in drawing attention to the fact that retro-pharyngeal abscess is in the great majority of cases not due to spinal disease but to disease of the retro pharyngeal gland This however, is now, I think, generally recognised

I shall be surprised if his method of operation meets with the same measure of agreement In my own experience no bad results have followed the method of operating through the mouth, and now that, with the aid of the suspension apparatus this can be carried out with so much ease and comfort, the abscess being opened and the remains of the gland curetted with precision and care so as to avoid material entering the larynx, an external operation seems unnecessary I am, Sir, yours faithfully,

Glasgow, April 2nd 1917 W S SYME

Medical News.

UNIVERSITY OF DURHAM FACULTY OF MEDICINE—At examinations held recently the following candidates were successful—

FIRST EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICINE.

Elementary Anatomy and Biology Chemistry and Physics—John James Norman Daniels Norah Hester Hamilton John Frederick Charles McColl Mary Foster Richardson, Henry Rochester Smith Alice Mary Stenhouse and William Christopher Wardle

Elementary Anatomy Chemistry and Physics—Leo Norton Knight O Neill

Elementary Anatomy—Edith Short Williamson

THIRD EXAMINATION FOR THE DEGREE OF BACHELOR OF MEDICINE

Materia Medica Pharmacology and Pharmacy Public Health Medical Jurisprudence Pathology and Elementary Bacteriology—John Maurice Brydson (second-class honours), Dorothy Edith Butcher Iris Marjorie Cheeseright, Samuel Foskett Samuel Elijah Goulstine John Parkinson Higham, David Levinstein and Hans Wilhelm Walther

UNIVERSITY OF MANCHESTER—At examinations held recently the following candidates were successful—

THIRD M B AND CH.B EXAMINATION

F H Anderson Mary G Cardwell Harriet R L Reid Brian Walley, and Ethel D Willis

SECOND M B AND CH.B EXAMINATION

R J Allison, Mary E Boullen E. B A Edelston Olive M Gimson, Archibald Harris and Annie G Thompson

FIRST M B AND CH B EXAMINATION

Part I Inorganic Chemistry and Physics—P D Abbatt G V Ashcroft J B Bennett Clifford Boothman William Broadhurst H M Coope Eugenia R. A Cooper N S Craig S W Drinkwater O M Duthie Winifred M Edghill H. E Emmett E S Frischmann W H Gratrix Marguerite F Johnstone J I Kelly Eva G Le Messurier Cecil Nelson L S Potter W E Powell Margaret Lownall Ragheb Salib F H Scotson H L Sheehan Margaret Single J W Smith Benjamin Sykes S N Taylor Nora M Walker Raymond Williamson James Worthington and James Yates

Part II Biology—R S van Aalten P D Abbatt Reginald Anderton G V Ashcroft J B Bennett, Nancy F Bleakley James Chronnell H M Coope Eugenia R A. Cooper N S Craig S W Drinkwater O M Duthie Winifred M Edghill Caroline M Edwardes Evan Gwendolen A. G Edwardes Evans H E Emmett T N

Fisher B S Frischmann, Edward Gleaves, W H Gratrix, Ruth Hill C D Hough Marguerite F Johnstone, J I Kelly R R Lane W L Martland Iva G Le Messurier, Cecil Nelson A C Newman G F S Parker L S Potter W B Powell Margaret Pownall W G T K Robinson Ragheb Salib F H Scotson H L Sheehan Margaret Single J W Smith Benjamin Sykes S N Taylor Leo Unsworth, Nora M Walker Raymond Williamson James Worthington, J R Wright, and James Yates

Chemistry —Nancy E Bleakley Caroline M Edwardes-Evans T E Forshaw Florence M I Graham C D Hough A C Newman, El S El G Sheir Mary I Turner and Leo Unsworth

Physics —T N Fisher

DIPLOMA IN DENTISTRY (THIRD EXAMINATION)

C E Cardwell and Norman Flitcroft.

DIPLOMA IN DENTISTRY (SECOND EXAMINATION)

Dental Mechanics —E L Morgan Frank Torkington and Harold Walmsley

Dental Metallurgy —Teresa Candon E L Morgan Frank Torkington and W R Williams

DIPLOMA IN DENTISTRY (FIRST EXAMINATION)

E S Poulter

Chemistry —Stanley Booth R V Littlewood and Dorothy Marsden

NO meeting of the British Association, which has assembled regularly since 1831, will be held this year

A UNIFIED POOR LAW AUTHORITY FOR LONDON —The London County Council adopted on Tuesday last a recommendation of its Local Government Committee in favour of setting up at once in London a Central Poor Law Authority

SOCIETY FOR THE STUDY OF INEBRIETY — At the annual meeting to be held in the rooms of the Medical Society of London, 11, Chandos street Cavendish square, W, on Tuesday, April 10th, at 4 P M, Dr R Murray Leslie will open a discussion on the Instruction of the Public in the Importance of the Prevention and Arrest of Alcoholism

ROYAL COLLEGE OF SURGEONS OF ENGLAND — Demonstrations of specimens in the Museum will be given in the Theatre of the College, Lincoln's Inn fields, by Mr S G Shattock, the pathological curator, at 5 P M each Monday, as follows —April 16th, Syphilis, 23rd, Gunshot Injuries, 30th, Gunshot Injuries The demonstrations are open to medical students and practitioners, as well as to first-aid and ambulance students

CHADWICK PUBLIC LECTURES —The spring course of lectures includes two by Captain C G Moor, R A M C (T), on the Profitable Keeping of Fowls and Rabbits on Hygienic Methods (April 12th and 19th 6 P M, at the Royal Sanitary Institute, 90 Buckingham Palace road, S W), a lecture by Dr F W Mott, F R S, on Mental Hygiene in Shell-shock during and after the War (April 26th, 5 15 P M, at the Royal Society of Medicine 1, Wimpole street, London, W), and three lectures on War Time Food, by Dr S J Moore medical officer of health of Huddersfield (April 20th and 27th, and May 4th, 7 30 P M, at the Municipal College, Lansdowne, Bournemouth) Admission to the lectures is free Particulars from the Secretary of the Chadwick Trust, 40 (6th), Queen Anne's Chambers, London, S W 1

PAYMENT FOR THE DOMICILIARY TREATMENT OF TUBERCULOSIS IN BELFAST —A Belfast correspondent writes Under the tuberculosis scheme payments are made to doctors for domiciliary treatment, and in Belfast, at the March meeting of the City Council, a list of payments made to local doctors for this purpose during the past year was presented in the Tuberculosis Committee's minutes for the approval of the Corporation The total amount was £4,536, divided amongst 101 doctors in amounts varying from £600 to 5s, payments being made according to the number of visits Among the recipients were several members of the Corporation, and the question now arises of the legality of such payments It is reported that the difficulty will be got over by some of the medical members resigning their seats, unless the question can be otherwise solved

THE ROYAL PORTSMOUTH HOSPITAL —At the annual meeting of the Royal Portsmouth Hospital held on March 27th the report for the past year was presented It stated that the number of civilian in patients treated was 2098, of military 598 that the daily average number of beds occupied was 160, and that the average cost per bed occupied was £71 11s 5d, as compared with £65 5s 6d in 1915 The year closed with a debt of £1369 The heightened expenditure of £12,308 was due to the great increase in the cost of provisions, drugs, and other necessaries Dr J T Leon, an assistant physician for 15 years, whose death had recently occurred, bequeathed £500 to the hospital The treatment of venereal diseases in the district had been taken in hand, at the invitation of the Portsmouth county borough council, the committee agreeing to coöperate with the council in carrying out the proposals of the Local Government Board on the understanding that no portion of the cost should fall upon the funds of the hospital

𝔓𝔞𝔯𝔩𝔦𝔞𝔪𝔢𝔫𝔱𝔞𝔯𝔶 𝔍𝔫𝔱𝔢𝔩𝔩𝔦𝔤𝔢𝔫𝔠𝔢.

NOTES ON CURRENT TOPICS

Criminal Law Amendment Bill

THE Criminal Law Amendment Bill has been passed by a Standing Committee of the House of Commons and been ordered to be reported to the House One or two interesting matters were discussed in the later stages of the Bill On Wednesday, March 28th, Mr DICKINSON proposed to insert a new clause imposing a penalty on a person who, knowing that he was suffering from venereal disease in a communicable form, communicated it to another person otherwise than by sexual intercourse or by gross neglect The Bill already contained a clause dealing with the communication of disease by sexual intercourse Sir G CAVE, the Home Secretary, observed that the proposed new clause as it was framed would render it almost impossible for a person affected by venereal disease to continue to live The proposal, however, found considerable support amongst members of the Committee, and a division showed that 16 Members were on each side In the event of a tie the custom is for the chairman to give his casting vote on the side of leaving the matter open for further consideration Accordingly he voted against the proposed new clause, which was rejected A clause was brought forward by the Home Secretary to permit of the detention in an approved institution or home of a girl under the age of 18 who was convicted of importuning or solicitation The detention is to last until she is 19

National Insurance (Part I Amendment) Bill

Sir EDWIN CORNWALL has introduced in the House of Commons a Bill designed "to amend the enactments relating to National Health Insurance with respect to persons suffering from disablement in consequence of the present war" It was read a first time

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HOUSE OF COMMONS

WEDNESDAY, MARCH 28TH

Hospital Accommodation at Sandhurst

Answering Mr EVELYN CECIL, who asked a question respecting increased hospital accommodation at the Royal Military College, Sandhurst, Mr MACPHERSON (Under Secretary for War) said Temporary arrangements have been made to provide extra hospital accommodation in the Commandant's quarters at the Staff College, where 20 beds have been allotted and during the recent outbreak of mumps certain of the halls of study were utilised Further hospital improvements are under consideration There have been two deaths, one from cerebro-spinal fever and the other from pneumonia

THURSDAY, MARCH 29TH

Dispensary Medical Men in Ireland

Mr DORIS asked the Chief Secretary for Ireland to state under what statute or by what authority the Local Government Board for Ireland claimed the right to object to the appointment of Dr George Maguire as medical officer of Newport (Mayo) dispensary district, on the grounds that he was of military age, and, if the Board had no such legal right would he advise the immediate sanction of the appointment, so that the sick poor of this district might have the medical attendance to which they were entitled —Mr DUKE replied Under the Poor Law Relief (Ireland) Act, 1851, the approval of the Local Government Board is required to any appointment of the medical officer of a dispensary district

Mr DORIS Can the right honourable gentleman give me the grounds why this gentleman was not sanctioned?—Mr. DUKE My impression is that he was not sanctioned because he was of an age when he was eligible to render much more important services to the State

Convalescent Homes for Nerve-strained Soldiers

Mr KING asked the Pensions Minister whether he would specify what arrangements were being made by his department as to the provision of convalescent homes, entirely unconnected with lunacy, for soldiers of the rank and file discharged from the Army owing to uncertifiable nerve strain where the men had cheerful surroundings and facilities for industrial occupation, and whether any allocation had been made from the National Relief Fund for this purpose under the administration of groups of local committees — Mr BARNES wrote in reply Cases of the kind referred to are being sent by local committees to ordinary convalescent homes which are entirely unconnected with lunacy A special institution will shortly be opened as an experiment at Golders Green in which men suffering from nerve-shock will be suitably treated and provided with occupation It is not intended to draw upon the National Relief Fund or this purpose

Military Service (Review of Exceptions) Bill

In moving the second reading of the Military Service (Review of Exceptions) Bill, Mr BONAR LAW (Chancellor of the Exchequer explained at length the provisions of the measure, which is to permit of the re-examination of men who have been discharged from the Army or rejected at a previous medical examination. He stated the military needs for more men, and said that the Bill would enable the military authorities to deal with a million men, from whom it was hoped to obtain 100,000 recruits In a long war like this standards had changed and must continually change Men who were rejected in the earlier stages of the war would now be taken During part of the Derby recruiting campaign an immense number of men came forward at one time There were, he believed, on one day as many as 300,000 In these circumstances medical examination was not as thorough as it ought to have been if there had been more time That was shown on the other side of the picture when many men were taken where it was a distinct disadvantage that they should have been They were taken on account of being passed improperly by medical boards If that was so, it might be assumed that some had been rejected who might well have been passed and it was not unfair that they should again be subjected to examination As to the re-examination of men, he said that the Army Council had had their lesson with regard to medical examination It was not in their interests either to take men who were not fit for service or to employ the very limited medical staff in constantly examining men who would never be fit for service

Mr HOGGE, in submitting an amendment dealing with the pension rights of men who would be brought into military service under the Bill, urged that if men passed the medical examination there should be no question of pre-existing weakness if they afterwards broke down.

Mr PRINGLE criticised at length medical examinations as they had been conducted

Mr ASQUITH said that it was assumed that the men who were going to be re-examined included men who hitherto had been exempted on medical grounds But some of them might be men who, having been originally passed and gone into the Army, had been discharged as unfit for service He did not wish to dogmatise, but so far as he had been able to familiarise himself with the facts, he was not at all sure that an equal number of men had not been passed into the Army who ought to have been It was a very disputable point as to where the balance lay No one wished to protect men who had been rejected on imperfect evidence It was perfectly right that they should be re-examined and perhaps subjected to a fuller examination

Mr BONAR LAW said that he would ask the War Office whether it was possible to make the medical examination so perfect as to run no risks of passing unfit men

Sir RYLAND ADKINS hoped that the services of civilian medical men with their varied experience of many kinds of disease should be utilised to a greater extent in conducting the medical examinations

Sir MAURICE LEVY asked for an assurance as to the thorough character of the medical examinations

Mr MACPHERSON (Under Secretary for War) said that some attacks had been made upon the medical men who had been examining recruits for the last few months There had been heavy recruiting rushes He was not surprised that some doctors did make mistakes but honourable Members would not find a Harley-street specialist looking back upon his medical prognoses and diagnoses who had made less than 1 per cent of mistakes He could confidently say that out of 1,500 000 cases the doctors had not made mistakes amounting to more than 1 or 2 per cent He thought that it was greatly to the credit of the doctors that they had performed the work to such great satisfaction.

The second reading was carried by 175 votes to 18

In the discussion in Committee on the Military Service (Review of Exceptions) Bill on Friday, March 30th considerable criticism arose on the provision which permitted men who had been discharged for wounds and sickness incurred at the front to be re-examined

Sir MAURICE LEVY moved an amendment to the effect that the medical re-examination should be undertaken by a board of not less than two medical men one of whom should be the man s own doctor if he so desired

Mr MACPHERSON pointed out that it would be impracticable to have a rule that the man s own doctor should be on the board who re-examined him The Government had already stated that the examinations would be made by competent medical boards including the best available civil medical ability Two out of every three medical men on the boards would be civilians A direction might however be given by the War Office to the medical boards to receive a certificate from a man s own doctor

The amendment was withdrawn

MONDAY, APRIL 2ND

Hygiene in T.N T Factories

Lord H. CAVENDISH-BENTINCK asked the Minister of Munitions whether his attention had been called to the fact that in some Government T.N T factories there were many breaches in the regulations designed to safeguard the health of the workers, was he aware that the exhaust ventilation provided was imperfect and inadequate, that the mess-room, cloak room, and washing accommodation was also inadequate, and that the distinction between the clean and dirty side of factories had been abandoned so that the garments of those engaged on poisonous and non poisonous processes mingled together, and would he say what action he proposed to take to improve the conditions —Dr ADDISON replied A set of rules for observance in T N T factories has recently been issued by the Ministry These embody the practice which has proved most successful in T.N T. factories, and it is my intention to ensure that the rules as published are complied with in all these factories

The Calling Up of Medical Students

Answering Sir W BYLES, Mr MACPHERSON (Under Secretary for War) wrote The arrangements at present in force with regard to all students, including medical students, are that students are not in ordinary circumstances called to the colours if, being under the age of 31 they are classified lower than B 1, or if they are 31 or over and are classified lower than A. Any student falling under this arrangement is unless in possession of a tribunal exemption, required to join an Officers' Training Corps In view, however, of the requirements of the R.A.M.C , medical students in any class who are within 24 months of taking their medical degree or licence are not called up if they join an Officers' Training Corps

TUESDAY, APRIL 3RD

Military Service (Review of Exceptions) Bill

In the course of the proceedings in report on this Bill, Mr PRINGLE moved an amendment to provide that in any case where a man examined under the measure and passed for military service produced a medical certificate that he was unfit for general service, or for any form of military service, he should be entitled to be re-examined by a special Medical Board

Mr FORSTER (Financial Secretary to the War Office) resisted the amendment on the ground that the mere fact that the man had been previously rejected would be enough to put Medical Boards on their guard in conducting the examinations

Many honourable Members urged the Government to accept the substance of the amendment Sir W COLLINS thought that there should be an opportunity of consulting specialists in these cases.

Sir J SIMON said that he was sure that Medical Boards had done their duty to the best of their resources, but they had a very hard task. It was well known that some very serious mistakes had been made, and it was desired that these mistakes should be minimised in the future It might be said that there might be cases where medical certificates given at short notice without previous knowledge of the case might not be very valuable But was it not possible that a qualification should be introduced into the amendment to secure that the certificate should only come from a practitioner who wrote with a personal knowledge of the man's medical history? The medical man might also be required to state what in his opinion was the reason why the man should not be called upon to serve

Mr FORSTER replied that all honourable Members were at one in trying to secure fair treatment for the men and fair treatment for the Army He did not want to make any reflections on the medical profession because taken on the whole it was a singularly honourable profession, but it was generally agreed that some medical certificates were worth a great deal more than others If it could be secured that all the medical certificates to be submitted to the Medical Boards were of the better character, then he would not hesitate to accept the amendment, but he was afraid that at present he was unable to accept the view that the presentation of a medical certificate by the man who was being examined ought to secure for him an examination by a special Medical Board. He clearly recognised the strong view expressed in the course of the debate and he would undertake to consult with the Secretary of State for War and his advisers before the Bill was passed, to see how far it was possible to meet the wishes of the House Further than that he could not go

The amendment was rejected by 128 votes to 44

The Bill afterwards received a third reading

THE death is announced of Emil von Behring, professor of hygiene in the University of Marburg

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

ALL SAINTS HOSPITAL FOR GENITO-URINARY DISEASES Vauxhall Bridge road S W —Clinical Assistant for afternoon work in Out patient Department

BLACKPOOL, VICTORIA HOSPITAL.—House Surgeon Salary £250 per annum with board &c

BODMIN CORNWALL COUNTY ASYLUM —Female Junior Assistant Medical Officer Salary £200 per annum with board &c.

BOLTON INFIRMARY AND DISPENSARY —Senior House Surgeon Salary £230 per annum with board &c

BOOTLE BOROUGH HOSPITAL —Junior House Surgeon Salary £170 per annum with board &c

BRIGHTON ROYAL SUSSEX COUNTY HOSPITAL.—House Physician and Junior House Surgeon Salaries at rate of £100 per annum with board &c.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN —Female House Surgeon Salary £150 per annum with board &c

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum, with board &c

BURY INFIRMARY —Junior House Surgeon. Salary £150 per annum with board &c

CUMBERLAND COUNTY OF —Female Assistant Medical Officer Salary £350 per annum

DERBYSHIRE SANATORIUM FOR TUBERCULOSIS Walton lane near Chesterfield —Assistant Medical Officer Salary £300 per annum with board &c

DEVONPORT ROYAL ALBERT HOSPITAL.—Assistant House Surgeon unmarried Salary £150 per annum with board &c.

EAST LONDON HOSPITAL FOR CHILDREN Shadwell E —Female Assistant Resident Medical Officer Salary £125 per annum and all found

HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill —Casualty Officer for Out patients Department. One whole time salary at rate of £150 per annum with board or two half time at rate of £75 per annum each lunch and tea provided

LEEDS PUBLIC DISPENSARY —Second Female Resident Medical Officer Salary £200 per annum with board &c.

LIVERPOOL UNIVERSITY FACULTY OF MEDICINE —Lectureship in Ophthalmology

MANCHESTER ANCOATS HOSPITAL.—House Physician Salary £150 per annum with board &c

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN Park place Cheetham Hill road —House Surgeon Salary £150 per annum with board &c

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST Fitzroy square W and Northwood —Ophthalmic Surgeon

NETLEY BRITISH RED CROSS HOSPITAL.—Two Junior Medical Officers

NEWCASTLE UPON TYNE EDUCATION COMMITTEE.—Assistant School Medical Officer Salary £300 per annum

NEW HOSPITAL FOR WOMEN Euston road, N W —Female Assistant Physician and Assistant Surgeon

QUEEN'S HOSPITAL FOR CHILDREN Hackney road Bethnal Green E —House Physician Casualty House Surgeon and House Surgeon for six months Salary £100 per annum with board &c.

QUEEN MARY'S HOSPITAL FOR THE EAST END Stratford —House Surgeon

ROTHERHAM HOSPITAL.—Junior House Surgeon Salary £150 per annum with board &c

ROYAL HOSPITAL FOR DISEASES OF THE CHEST City road E C 1 —Assistant Medical Officer for Tuberculosis Dispensary Salary £350 per annum

SHEFFIELD ROYAL INFIRMARY —House Physician Salary £120 per annum with board &c

SHREWSBURY SHIRLETT SANATORIUM Shropshire —Temporary Assistant Resident Medical Superintendent Salary £300 per annum

SOUTH LONDON HOSPITAL FOR WOMEN 103 South Side, Clapham Common S W 4 —Female House Physician for six months Salary at rate of £100 per annum with board &c.

STOKE ON TRENT COUNTY BOROUGH —Temporary Tuberculosis Officer Salary £500 per annum

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon Salary £120 per annum with board &c.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY —Resident House Surgeon Salary £120 per annum with board &c

THE Chief Inspector of Factories, Home Office London, S W , gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Brynamman (Carmarthen)

Births, Marriages, and Deaths.

BIRTHS

JEFFREY —On March 23rd at Glenbank, Jedburgh the wife of John Jeffrey M.B F R C S E —a son

MCALLUM.—On March 28th at Scotswood Milford-on Sea, the wife of J H McAllum R A.M C —a son

MARRIAGES

FRASER—MELLOR.—On March 27th, at the Parish Church Ashton under Lyne Thomas Lochhead Fraser Captain R A M C to Dorothy Walton only child of the late Mr A E Mellor J P of Springfield View Ashton under Lyne

PEARSE—WILBURN —On March 30th at St. Saviour s Church Colgate Captain Robin Pearse F R C S C A.M C of Toronto to Amy Christine eldest daughter of Mr and Mrs E J Wilburn, The Croft Southwick

N B —A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

Notes, Short Comments, and Answers to Correspondents.

MEDICAL NOTES IN HISTORICAL MANUSCRIPTS THE STUART PAPERS

PART VI of the Stuart Papers, belonging to His Majesty the King and preserved at Windsor Castle has been issued under the auspices of the Historical Manuscripts Commission These papers were formerly the property of the titular King James III , otherwise the Old Pretender and his sons, Charles Edward and Henry the Cardinal Duke of York, and after the latter's death were, with some trouble, acquired by the representatives of the British Crown The papers now given to the world in six bulky volumes possess, it goes without saying, great historical value So far as matters of special interest from a medical point of view are concerned, however, there is nothing to be noted beyond descriptions of the illnesses and death of Mary of Modena (Queen of James II) references to the health of her son, the titular James III , and allusions to their respective medical attendants As bearing on these points we give the following excerpts from the calendar —

Court Physicians and Surgeons

James II to the Duke of Powis (Lord Chamberlain of the Household) —1695 June 25 St Germains —Warrant for swearing and admitting Sir William Waldegrave to be first physician to the king

James III to James Porter (Vice Chamberlain of the Household) —1701 Oct 24 St Germains —Warrant for swearing and admitting the following persons to the following places John Constable, first physician in ordinary to the King Calahan Garvan, physician to the Household

Warrants dated July 20 and 23 1706 —For Calahan Garvan and Laurence Wood to be physicians in ordinary to his Majesty (James III)

Queen Mary to Walter Crane Gentleman Usher of the Privy Chamber —1714 Nov 29 St Germains —Warrant for swearing and admitting Michael Bermingham into the place of one of her chirurgeons

James III to Joseph Farrelly Doctor of Medicine —1761 Aug 1 Avignon.—Warrant constituting him one of his extraordinary physicians

Michael Bermingham to James III —1718, May —A petition in French stating that he was a native of London and had been for several years a surgeon both at the Hotel Dieu and the General Hospital at Paris and that the late Queen Mother had in 1714 appointed him her sworn surgeon and praying to be appointed surgeon to his Majesty in reversion after Monsr Beaulieu without any wages or emoluments

Health of Mary of Modena

The Duke of Berwick to James III —1714 Feb 4 St Germains —The Queen has had a little shivring this afternoon and her pulse is quick but Doctor Garvan hopes that a breathing swett will carry it of so your Majesty need not be in paine about her "

The Same to the Same —1714 Feb 15 Versailles —' This is to give your Majesty an account that this morning at half an hour past eight I left the Queen in a very good way she had rested in the night her pulse was pretty well though not free from feavour which the doctor does not expect will leave her yet some dayes in short we have much more to hope than to feare and barr accidents we may reckon her almost out of danger

The Same to the Same —1714 Feb 17 8 30 A.M St Germains —Doctor Garvan gives an account of the Queen s condition she is, thank God in a mending way though it will come on sloughly The Physicians finds her pulse almost quite right. She looks much better and her voice is considerably stronger so that we have all reason to hope she will doe well

James III to Mr Dicconson —1714 Feb 24 Barr — My heart is now at ease intirely as to the Queen s health of which last night s letters brought so comfortable an account When nothing but strength is wanting that is soon gained For God s sake take care she manage herself and do nothing to disorder her and above all not endeavour to write too soon for as great a comfort as twould be to me to see her hand again I had much rather be longer without that satisfaction than that she should in the least incommode herself for it "

The Duke of Berwick to James III —1714 Feb 24 St Germains.—" The Queen thank God continues in a thriving way and I hope within eight dayes she may beginn to sitt up She sleeps and eats well

Queen Mary to Mr Dicconson —1714 July 5 Chaillot.— I have bathed this morning and am very well I shall know to-morrow by Mr Garvan the French doctors advice as to my drinking of waters and which they think best for me "

The Same to the Same.—1714 July 7 Chaillot — The French doctors are of opinion I should go to Plombières

The Duke of Berwick to James III —1715 April 24 St. Germains —' Your Majesty will have an account by the doctors of the Queen s sickness. I hope that the quinquina will carry it soon of but I beginn to fear her journey will not be or at least of a good while

The Same to the Same —1715 April 29 St. Germains.— The Queen thank God is free of her feavour and I make no doubt but with the continuation of her quinquina will not have it any more but I do not think it possible for her to be soon in a condition of travelling

The Same to the Same —1715 May 3 St Germains.— The Queen is much better but still very weak."

Queen Mary to Mr Dicconson —1715 May 26 Chaillot — I thank God I have no other ailement than the gout I had a great deal of peine last night but after I was a bed I grew better and I slept well I am pretty well to-day but not able to sett my foo to the ground"

The Same to the Same.—1715 May 27 Chaillot — Tho the peine in my foo is very mueech abated yett it is very red and very much swelled so that I dont think I can putt it to the ground nor will I trye if I can till to-morrow but I think it necessary Dr Garvan and Beaulieu should see it to-morow or Wednsday Therefor pray gett them a Bureau chair to com he her one of these two days that I may resolve with theyr advice what to do"

General George Hamilton to the Duke of Mar—1716 Feb 13 Paris — The Queen has no been very well with some touches of the gout."

L. Inese to the Duce of Mar—1717 Sunday Sept 5 — Queen Mary hath been much out of order of late by colics and a looseness that hath mightily weakened her She is now much better"

Queen Mary to Mr Dicconson—1717 Sept 19 Chaillot — I was farr from well all day yesterday but I have had a good night by the help of treacle and ladonom drops and am well enough to-day"

L. Inese to the Duke of Mar—1717 Monday Dec. 20 — Queen Mary herself has been and still is indisposed though without any danger She had a great pain in her hand before it swelled but now she is much more easy Her physician is not sorry that her ailments are turned to the gout"

(*To be continued*)

THE ROYAL SOCIETY OF MEDICINE AND THE JOURNALS OF MILITARY HOSPITALS

To the Editor of THE LANCET

SIR—A number of military hospitals, both here and at the front, are printing "Gazettes," and many of them contain matter which cannot fail to be of interest to the future historian of the medical aspects of the war, and it is, therefore, important that some complete sets of each should be preserved I presume that those responsible for their issue deposit the usual copyright copies at the British Museum and the other copyright libraries, but my object in writing is to urge that they should also send complete sets (preferably two sets) to the library of this Society the largest medical library in the Empire I would undertake that they would be carefully bound and preserved and would always be available for reference

I am, Sir, yours faithfully,
J Y W MACALISTER, Secretary

1, Wimpole-street W., March 30th 1917

UNTAPPED SOURCES OF STARCH

To the Editor of THE LANCET

SIR,—In an interesting book published in 1854 under the title of "Wanderings among the Wild Flowers How to See and How to Gather Them containing two chapters on the economical and medicinal uses of our native plants, by Spencer Thomson, M D, F R C S.E, reference is made to the *Arum maculatum* as a source of starch The tuber of the arum in its natural state," says the author, contains an acrid juice along with a considerable amount of starchy flour the latter when freed from the acridity constitutes a nutritious article of diet", and in the chapter dealing with the economic properties of British wild plants he adds "the root tubers of the arum or cuckoo-pint are collected and prepared for sale" In view of the great need for home-grown starch at the present time it would be interesting to know whether the arum could be cultivated with any prospect of adding to our supply In Elizabethan times arum starch was used to stiffen ruffles, and it might still serve the purpose of starching linen instead of wasting upon mere vanity any of our present scanty stock of starch

I am, Sir, yours faithfully,
CERES

March 30th, 1917

"LA BAIONNETTE"

LONG years ago it was said that the true test of wit was whether it could be translated into a foreign language and lose no point thereby A mere pun will not bear this test The following extracted from the number of *La Baionnette* of March 1st, will, perhaps, pass the test —

La Paperasse

Quelqu'un l'a dit : pour tuer un homme il faut depenser son poids de plomb

Mon ami je puis vous assurer que pour le guerir il faut au moins trois fois son poids de papier

The sketch shows an officer with his right arm in a sling interviewing an army official seated at a table with enormous piles of papers stacked up at either hand and a few loose sheets lying around the room It is true that we have all heard that it takes a man's weight in lead to kill him but we have not all yet heard that it takes three times his weight of paper to cure him—and paper is so dear now This highly coloured and amusing paper looks with a comic but sympathetic eye on the medical and Red Cross work in the war and its responsible editors are M Gus Bofa and Jean Villemot who are careful to state that the sketches are purely imaginative and that no ill will must be suspected towards any medical or auxiliary staff The number costs 25 centimes and is published on Thursdays at 30 rue de Provence Paris

GUM AS A FOOD

THE question of how far gum is utilisable as food in the same way as starch and sugar is probably not yet finally settled It seems to have exercised the minds of pharmacists and medical men for a long time some affirming that orientals could live on gum alone and others denying or doubting it, supporting their denials by reference to experiments performed by well known observers or by themselves Pavy said that "gum is, doubtless susceptible of being utilised as an alimentary principle although nothing definite is known about what becomes of it when introduced into the alimentary canal" He adds 'I have experimented both upon rabbits and dogs with reference to this point" Magendie also fed dogs on gum, but they apparently soon died from inanition The varieties of gum, however, are many and their properties undoubtedly vary owing to the mixtures of different gums by natives and dealers In 1847 Mr John Savory, the President of the Royal Pharmaceutical Society of Great Britain, wrote as follows of gum arabic —

> Among the demulcent substances, gum Arabic is the most frequently used in the practice of medicine It is sometimes given alone to relieve tickling coughs by allowing it to dissolve slowly in the mouth A solution of this gum in the proportion of one ounce to a pint of barley water taken to the extent of a wineglassful, furnishes an excellent beverage in cases of inflammation of the kidneys and bladder and in the inflammatory stage of gonorrhœa. From its light and supposed digestible nature it is considered a wholesome and nutritious food thousands of the Moors supporting themselves entirely upon it during the time of harvest Hasselquist mentions in his Voyages that a large caravan of Abyssinians would have starved if they had not discovered a stock of gum Arabic amongst their merchandise, on which alone a thousand persons subsisted for two months About six ounces of this gum are sufficient to support a man for a day It is mixed occasionally with milk animal broths, and other victuals

Gum arabic is said to consist of 70 per cent of arabin isomeric with cane sugar, 17 per cent of water, and potash and lime Arabinose or arabin sugar, is a crystallisable sugar or glucose and is prepared by the action of sulphuric acid on arabin Fredrik Hasselquist was a Swedish naturalist, and one of the most eminent pupils of Linnæus Having heard Linnæus express a wish that some naturalist would explore Palestine, he embarked in 1749 and explored Egypt, Arabia and Palestine, and was about to return with a rich collection when he died at Smyrna in 1752 His valuable observations were published by Linnæus in Swedish and translated into English in 1766, under the title, "Voyages and Travels in the Levant, 1749–52."

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a.m. by Steward's Instruments*)

THE LANCET Office April 3rd, 1917

Date.	Rain fall.	Solar Radio in Vacuo	Maximum Temp Shade	Min. Temp	Wet Bulb	Dry Bulb	Remarks
Mar 28	0·05	62	45	30	34	36	Overcast
" 29	..	79	50	36	41	44	Cloudy
" 30	0·06	87	51	36	35	39	Cloudy
" 31	0·25	49	39	34	36	36	Overcast
April 1	0·19	64	41	32	33	35	Overcast
" 2	0·05	71	40	31	34	34	Snowing
" 3	0·12	79	44	33	34	35	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author and if possible of the article, should be written on the blocks to facilitate identification*

Letters whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot prescribe or recommend practitioners

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor"

We cannot undertake to return MSS not used.

Offices 423, STRAND, LONDON, W C 2

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INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET Commencing with the new year, the price was raised to *8d* The rates of subscription remain as revised in October

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The Lettsomian Lectures

ON

WAR SURGERY OF THE ABDOMEN.

Delivered before the Medical Society of London

BY CUTHBERT WALLACE, B S LOND,
F R C S ENG, C M G,
SURGEON TO ST THOMAS'S HOSPITAL CONSULTING SURGEON, BRITISH EXPEDITIONARY FORCE.

LECTURE I

Delivered on March 19th 1917

FOREWORD

MR. PRESIDENT AND GENTLEMEN,—I have entitled these lectures ' War Surgery of the Abdomen," but it may be asked if there is really such a thing as war surgery as distinct from civil surgery I am inclined to think that there is very little difference What actual difference there is lies in the anatomical nature of the injuries, such injuries perhaps being influenced in some degree by the high speed of the projectile, though this has, it seems to me, been very much over emphasised

Good surgical principles apply as much in war as in peace and should govern all our treatment if we wish for good results. War surgery is really largely concerned with overcoming what, in civil life, one would call ' adverse circumstances," and in striving to make war conditions as much like peace conditions as is possible It is in great degree a matter of when and where to operate and how best to move the wounded man to the place where he will win back to health

There has been, and I daresay there always will be some difference of opinion between the medical and military branches The surgeon wants to start treatment as soon as possible and to keep his patient quiet, the soldier is mostly concerned, and rightly, to clear the fighting area of the sick and wounded. There are some surgeons who are too surgical and some combatants who are too combatant The result of course, is a compromise A happy sign is the passing away of the old shibboleth, "You cannot do this—we are at war ' I should say in no previous war has the medical man had it so much his own way There is a sympathy and trust between the combatant and the medical branches which was not present in South Africa The old style staff officer, who cursed the ambulances at one time for being in the way—and soon after for being out of the way—is defunct.

The Medical Service in its present campaign is without exaggeration a wonderful organisation It shows signs of strong life for it continues to improve So good is it that we must continue to strive in every way to make it better and better, we must use every means to improve mobility and to save labour, and adapt ourselves to the ever-changing conditions of war

UTILITY OF FORMER EXPERIENCE

Of this I am somewhat doubtful It is in some ways as much a hindrance as a help In judging of the number of the wounded the proportion of killed to wounded, the accommodation required it seems to have been a help as such things alter but little though they are altering, but as a general guide to surgery it has been, if anything, somewhat of a handicap

In South Africa one learnt to treat many wounds with little respect One allowed wounds received under non surgical conditions to scab over and many became confirmed in their opinion that rest starvation, and morphia was the right treatment in abdominal wounds.

This war has proved that good surgical principles will assert themselves—that the dirty wound must be laid open and that a penetrating abdominal wound must be explored

The changing conditions of wars seem to show that surgical histories brought out after the war are largely a labour lost and a waste of time Every effort must be made to summarise and render accessible the experiences of the early months of a war for use in its later periods This has been done in the present campaign by both combatant and medical services The Army is full of schools where by lectures and demonstrations officers and men are taught new methods of warfare Although from the nature of things the same methods are not applicable in the Medical Services, a great deal has been done to spread knowledge

The Army Medical Department has issued pamphlets on various subjects wherein the experience gained has been put at the disposal of all the officers attached to the Army There is also the Medical Research Committee, whose arrangements for the interchange of knowledge by postcards, and reports which tell of the progress of cases as they pass from one unit to another, have been of the utmost value I should like to take this opportunity of asking those into whose hands such inquiries come to use their utmost power to supply the details asked for By such means treatment has been modified and improved with the knowledge gained

A series of well observed cases while the war is in progress is worth pages of statistics when the fight is over At the beginning of the war there was somewhat of a breach between the front and base in France and the base in England Now there is no such breach and the experience gained at the base is transmitted to the front and surgical procedure varied in accordance with the results

Sympathy between the different units through which a wounded man passes is essential There has always been a tendency to criticise the unit in front of you, but it is always well, if you feel critical about the condition of a patient whom you received from a unit nearer the firing line, to try to put yourself in the position of the medical officer from whom you received the patient It has often happened to me when treatment has seemed open to criticism, to find that all has been explained by a personal visit to the medical officer, or unit from which the case has been received The passing of a wounded man from one unit to another is unavoidable in war, but every attempt must be made to lessen the disadvantages by the interchange of knowledge and the cultivation of friendly, not captious criticism

There is another way in which knowledge has been diffused I refer to those medical societies which have been instituted in various areas These are, of course, largely concerned with local interests, but the work they have done has been extraordinarily good There is a society at one of the bases which has been of more than usual value, as in it medical officers, through whose hands the patient passes in his journey from the trenches to the base, have met and such meetings have been very useful in making clear to the medical officers the difficulties that are met with in the various evacuation hospitals I am quite sure that these meetings have tended to make men more sympathetic to those who are working under different conditions.

Again, I believe that one of the most useful functions of a consulting surgeon has been the carrying of facts or opinions not only from the front to the base, but from one unit to another

THE FASCINATION OF ABDOMINAL SURGERY

That it is a fascinating subject there can be no doubt It is still more or less an unknown region in surgery It is a comparatively new subject and has risen from nothing to its present position during the lifetime of most of those present. Even in civil practice there are many problems still to be solved, and naturally there must still be many more in surgery of the abdomen in war Its interest lies, perhaps in the need for rapid decision, rapid action, and in a supposed dexterity which is not required in other branches. It is the Mecca of all young surgeons—and, for the matter of that of many old ones There is more joy, possibly, over one abdominal wound which recovers than over twenty other more ordinary cases

It is a curious fact that interest in abdominal surgery is shared by the public as anybody may ascertain who has followed the discussion on the treatment of abdominal wounds in this war If the abdomen is an unknown ground to the profession it is still more so to the ordinary public—hence the interest of the layman

SURGICAL OPINION WHEN THE WAR STARTED

There is no doubt that for many years it has been held that the operative treatment of abdominal wounds was not to be advised under war conditions This was partly due to want of success, as in the Spanish American War, and partly to the fact that many military surgeons were opposed to extensive operating anywhere near the firing line, and as abdominal surgery, to be successful, must be done at once, it is obvious that it could not be undertaken with success where all operations had to be postponed to a late period Although the expectant treatment was the orthodox one when the South African War broke out, many civil surgeons hoped to prove that it was wrong Surgeon General W. F Stevenson even issued an appeal for the trial of operation. The result was, however, only to confirm former opinion, though this opinion was now held on two somewhat different grounds One school held that the expectant treatment was in itself the right procedure, the other that it was the best that could be done in war

Some people believed that wounded intestine healed sufficiently often to warrant abstention, others, headed by Makins, believed that small gut lesions were practically always fatal, and that the success obtained by the "wait and see" policy was due to the escape of the bowel, although the belly had been penetrated Makins's opinion that the small gut area could be traversed by the small bullet without injury has been proved in this war If one reads the literature of the South African War, both private and official, the reason for want of success is at once obvious—the cases arrived too late It was not so much a question of the success of the expectant treatment as a failure of the operative Operations were secondary or late, and two strikingly successful cases of resection of small gut (Messrs Neale and Tuke) were operated on within 6 and 12 hours respectively

The reason for the late operation was the nature of fighting in an unsettled country of great distances The wounded could not be quickly brought to a hospital equipped with the necessary appliances. To operate in the veld with what appliances were at hand was too disheartening It was impossible to get even moderately decent conditions There was little or no water, and, what there was was often too filthy for words—the water of dams In addition there was the plague of flies that settled on everything, and lastly the operated man could not be kept quiet, it was lucky if he could ride in a horse ambulance

The conditions were utterly different from what now pertain, and this is the first time since the rise of abdominal surgery that a great campaign has been fought in a settled country and, what is more important still, with a fixed fighting line.

The small number of figures dealt with in the South African campaign was also a source of error In order to form an adequate idea of the efficacy of any treatment it is necessary to strike an average over a large series of cases. Now, in this present war one of the difficulties of establishing the operative treatment were the runs of bad luck which any operator had to face Even now, with conditions as nearly ideal as possible, one may meet a series of nine consecutive fatal cases. This must have a very depressing effect on any young surgeon or one who is not convinced that the operative treatment is in the main the best of all Now, nine abdominal cases means roughly about 600 wounded men, taking a moderate estimate of the proportion of abdominal wounds to total wounds. As a matter of fact, in the South African campaign, a casualty list of 600 wounded was considered a large one It can therefore be seen that if an operator happened to encounter such a series it is not to be surprised at that he had doubts as to the correctness of his procedure

The statistics of the South African campaign are very defective Surgeon-General Stevenson in the official history of the war, was only able to collect 207 cases of abdominal wounds. Among them, it is stated that there were 26 laparotomies with 18 deaths, a mortality of 69 2 per cent, and according to Stevenson the mortality was really even worse. The total death rate of all abdominal wounds quoted, operated and unoperated, is given as 30 4 per cent

In his most recent work 1910 "Wounds in War" the mortality is shown as 51 6 for laparotomies, the total of cases remaining the same—namely, 207 In any case the figures are really too small to have any real value Figures show that in the present campaign a mortality of 50 per cent is a good result but such a mortality in civil practice would be considered an awful death rate to face And yet it means, looking on the bright side, many lives saved

There is no doubt that certain people shot through the abdomen in South Africa, and treated expectantly, recovered As a matter of fact, there were two officers well known in the R A M C who recovered after such treatment, and I have no doubt that a knowledge of their recovery greatly strengthened the opinion that expectant treatment was, on the whole, the best There is no doubt that such successful cases make a very great impression on one

The South African campaign may then be said to have left surgical opinion opposed to operation This opinion seems to have been only strengthened by succeeding wars—the French War in Morocco, the Balkan War, and the Russo Japanese War In the last war the results were so bad that the Japanese forbade operation in the ambulances, even in the fixed fighting round Port Arthur little measure of success was obtained On the Russian side, it is interesting to note that a Princess Gedroitz, in an operating wagon, met with some measure of success, and fixed the limit of successful intervention to three hours after the receipt of the wound It is stated, at all events, that she saved the life of a colonel shot in the small intestine

METHOD OF TREATMENT IN THE EARLIER PERIOD OF THE WAR.

It is not intended here to say anything about the period of the retreat Under such conditions adequate provision for operating near the front was an impossibility, and all that could be done was to get rid of the wounded to the base with the least possible discomfort to them When the line became fixed the conditions were very different and there was a possibility of operating under good conditions It was no longer a question of whether a man could be operated upon, but whether he should be operated upon Still however, the old belief in the efficacy of the expectant treatment obtained

In order to understand what was done during this period it is necessary to say a word or two about the standard system by which the wounded man was evacuated Shortly, it was as follows A wounded man was first seen by the regimental medical officer to whom he was brought in the regimental aid post situated somewhere in the trench system He was then transferred by a stretcher to an advanced dressing station, usually situated just behind the trenches, and from there by car to the field ambulance and there he was kept until the time the motor convoy arrived—usually once in the 24 hours By this he was taken to the casualty clearing station, which was the first place adequately equipped for operative treatment In the early days the clearing station was a very different hospital from what it is now But, still there was reasonable facility for the performance of any operation if it was thought advisable With the idea of avoiding the disturbance of movement, a man wounded in the abdomen was kept sometimes, though not usually in the regimental aid post, often he was kept at a field ambulance, but usually he was transferred to the casualty clearing station and there treated

The usual mode of procedure was to put the man in the Fowler position, to improve the general condition by rest and warmth, to withhold food and water for three days and to administer morphia The thirst which was a distressing symptom of this treatment was combated to a certain degree by rectal salines and mouth washes.

I should like here to pay tribute to the great care and attention which the medical officers lavished on the cases Certain officers were told off day and night to attend to these patients and everything that could be done to alleviate their suffering and to make them as comfortable as possible and to cheer them up was done. I should say that if anything could have got these men well the attention that they received would have done so. The people who conducted the treatment were firmly convinced of its efficacy

This belief was strengthened by the behaviour of the patient Many patients, at first gravely ill, went through a period of improvement which often was very striking It was in a way unfortunate, but there is no doubt that improvement did take place, and so well were many of them that they were evacuated to the base and arrived there sometimes in good condition and sometimes gravely ill The men who saw the cases leave them apparently on the way to recovery could not bring themselves to believe that such cases did badly at the base It was unfortunate no doubt, that the means of communication between the base and the front was, in those days, inadequate, and this serves to emphasise what I have already stated about the value of free interchange of reports between the front and the base

If evacuation of these cases had not been necessary and it had been possible to keep them at the clearing stations, I have no doubt that the expectant treatment would not have survived as long as it did, for medical officers would have seen such cases become worse and worse, and in the end die. As a matter of fact, during my six months' experience at the Red Cross Hospital at Netley, I only saw two cases of wounds of the abdominal viscera, one was a case of cæcostomy and the other a transverse colostomy

When I arrived in France in May 1915, I spent some time at the base before I was sent to the casualty clearing stations I had the advantage of learning what was Sir George Makins's experience in the unoperated abdominal cases and heard that many died who had been thought well enough to be sent to the base I had always believed that operative treatment provided adequate arrangements could be made, was the ideal thing What I saw at the base and front only confirmed me in my belief that the best hope for the patient lay in an operation. I had no doubt that many cases which were put down as penetrating abdominal ones had not suffered injury to any hollow viscus and many that were considered penetrating were really only wounds of the abdominal wall I certainly saw many people treated by the expectant treatment die even at the casualty clearing stations, some after the period of delusive improvement

The expectant treatment was also a very trying time for the wounded man The knowledge that nothing could be done for him by operation, and that the only thing was to wait events, had a very depressing effect, although the medical officers did everything to cheer them up The idea was getting about that the doctors were unable to help a man who was wounded in the abdomen, and that he had really little chance

It is curious, but true, I think that the wounded soldier welcomes operation He feels that something is being done for him. I have often been asked the question, 'Can't you operate?" If I have answered in the negative, with an assurance that operation is unnecessary and that he will do well I have often detected a look of disappointment on the patient's face I mention this as showing that operation has no horrors for the soldier

EXPERIENCES OF THE ALLIES

The French have gone through very much the same experience in the treatment of abdominal wounds At first the only operation officially blessed was that of the suprapubic drainage of Murphy Gradually they have, like ourselves abandoned the expectant for the operative treatment

I cannot do better than quote you a letter which Professor Tuffier has kindly written me He says —

Abdominal surgery has undergone in France the following revolution Until the month of February 1915, installations did not allow one to operate under good conditions, on wounds of the abdominal cavity, and abstention was necessary in these circumstances At this period I found in a small ambulance quite near the front and very well organised several cases of cure of wounds of the intestine by laparotomy I reported them to the Society of Surgery and a movement commenced in favour of operation for all abdominal wounds It is because the motor surgical ambulances and the medical arrangements have been better organised and because the evacuation of the wounded has been done in a relatively short time that we have been able to arrive at a certain measure of success.

With the French as with us the period of the retreat corresponded to the period of expectant treatment and when the line became fixed the treatment underwent the same change as it did in the British Army As a matter of fact after the establishment of the operative treatment some French surgeons have from time to time again championed the expectant treatment but this finds little acceptance with the majority of French surgeons

MORTALITY IN THE PRE OPERATIVE DAYS

One is surrounded by all sorts of difficulties in trying to reckon the mortality and all the figures that can be obtained must be considered only approximate. One of the chief difficulties is the determination as to whether a wound is really penetrating Those who favour the expectant treatment would naturally tend to include cases which those who are opposed to this treatment would exclude

Into nine field ambulances over a period of six months there were admitted 1098 abdominal wounds with 333 deaths—a mortality of 30 per cent In the six casualty clearing stations during the same period there were admitted 131 cases of perforating abdominal wounds with 73 deaths From these figures it appears that the total mortality in the field ambulances and clearing stations was about 70 per cent. This, of course, does not include the deaths before patients reached the unit where statistics are kept

There were also the deaths at the base in France to be added, and in the pre-operative days to which we now allude many such deaths occurred, which would, as far as can be judged, bring the mortality up to about 80 per cent.

As showing the difficulty of arriving at accurate figures, it may be stated that statistics were prepared by certain people which stated that 80 per cent of abdominal wounds recovered These statistics, as a matter of fact, were got from certain ambulances and casualty clearing stations in which the surgeons were enthusiastic supporters of the expectant treatment It is significant that in these units the proportion of abdominal wounds to total wounds was high

In talking over the possibility of improvement with Colonel Crisp English, with whom I was fortunately associated when trying the effect of operative treatment, I used to say that if one could bring about a reduction of the mortality by 10 per cent. one would be fortunate There was no question of revolutionising the mortality, because with the abdominal wounds there would be a very heavy mortality, and it was only a question of saving a certain number of lives which otherwise would have been lost by the expectant treatment.

COMMENCEMENT OF THE OPERATIVE TREATMENT

Although rest treatment was the rule, some attempts at operation had been tried Early in the war Souttar commenced early operation with the Belgian Army, and credit must be given to him for what he did Owen Richards was the first I believe to publish results of operative treatment in the British Army[1] The first case of operation was performed on Jan 28th 1915, and the first successful case, that of a resection of 2½ feet of the small intestine was performed on March 18th, 1915 36 hours after receipt of the injury which period still stands as a record as regards time elapsed since the wound. A few other English surgeons had tried what could be done by operation, but the results were undeniably bad—so bad that most people had abandoned the attempt The reason for this was, no doubt, the late arrival of the cases at a place where an operation could be performed

Holding the opinion that operation was right, I commenced operating and making post-mortem examinations and soon convinced myself that the injuries were as a rule, of such a nature that recovery must be a very rare event It was also found that hæmorrhage was a chief cause of early death and that bullets produced very extensive injuries It has always been granted that hæmorrhage was the chief cause of early death but the advocates of expectant treatment seem to have focussed their attention more on the danger of peritoneal infection and the possibility of its localisation or disappearance than on the possibility of spontaneous arrest of hæmorrhage

The discovery that bullets produced extensive gut injuries was also of great importance as much stress had been laid on the smallness of the lesions produced by the modern small bore bullet, in fact the hope of spontaneous recovery of gut lesions was based on the assumption that such projectiles were comparatively innocuous This idea was constantly put forward in the early period of the war

The re-establishment that hæmorrhage was the chief cause of early death was of great importance, as it showed that only by rapid evacuation could one hope to combat such a condition In June 1915 I talked the matter over with Surgeon General W G Macpherson and obtained his leave to get some of the field ambulances to send the abdominal wounds at once with all possible celerity to the nearest casualty clearing station The results obtained by this small experiment were encouraging and in the first week in August 1915 Surgeon General Macpherson gave the order which made the rapid evacuation of abdominal wounds the official method in the First Army This was followed by rapid improvement in the results obtained.

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[1] Brit Med Jour August 7th 1915 p 2

SELECTION OF CASES FOR RAPID EVACUATION

The order to transfer all abdominal cases with celerity to the casualty clearing station put a great deal of responsibility on the field ambulance officers It is no light task to decide what cases can stand evacuation, in fact, it is one of the most difficult things that a medical officer is called upon to determine Many cases, of course, are better of a rest and food and warmth, but in the case of abdominal wounds it must be remembered that hæmorrhage is a chief cause of death and that the only hope for their salvation lies in the arrest of the hæmorrhage by surgical means It is, therefore, obvious that it is worth while taking risks in cases of abdominal wounds which it would not be right to take in other cases It is quite true that there is an appreciable danger of death from peritoneal affection, but, as a matter of fact, experience has shown that the need for celerity on this account is nothing compared to that necessary in the cases of hæmorrhage

COLLECTION AND EVACUATION OF WOUNDED

In forming a judgment on the results obtained by the operative treatment of abdominal injuries it is necessary to know something about the means by which such cases reach a casualty clearing station A knowledge of the difficulties is also necessary in order to form an appreciation of the really magnificent work which is being done by the regimental medical officer and his stretcher bearers and by the personnel of the field ambulances One can consider this subject under two heads (1) the collection, (2) the evacuation of the wounded man

1 By *collection* is meant the finding and bringing back to the regimental aid post the wounded when they lie out in front of our lines, and without going into particulars it can be well understood what the difficulties are when an attack has been made and our troops have advanced If it is difficult to find and collect the wounded after a successful attack it it still more difficult when the fortunes of battle sway backwards and forwards, and it is under the latter conditions that the wounded lie out for a considerable period In quiet times the collection is not difficult for the men are wounded very often in the trenches themselves

2 *The evacuation* —We will consider that a man has been wounded in the front trench The first field dressing most probably will be applied by himself or by one of his companions, possibly by the medical officer himself The patient will then walk, be carried, or be taken on some kind of stretcher to the regimental aid post. Even this is performed under considerable difficulties because the nature of the trench system involves getting round many sharp angles The regimental aid post is situated somewhere near the front line or in the commencement of a down communication trench It is generally in a dug out, or cellar, the accommodation is not grand, but one cannot help admiring the ingenuity with which these places are arranged and the care taken to make the surroundings as perfect as possible The neatness of such places is really greatly to be wondered at, fitted up as they are with extemporised shelves and tables and trestles for the stretchers Here the wounded man will be attended to if the regimental medical officer has not already been seen by him An adequate dressing will be applied and the ordinary medical measures taken for his comfort

Under the present system of evacuation an abdominally wounded man will not wait in this place He will be taken on a stretcher down the communication trench to a field ambulance post, which is a dug out where the field ambulance personnel are accommodated and where the regimental stretcher bearers hand the case over to the field ambulance From this point commences the long journey—sometimes as much as two miles—down the communication trench Everyone has seen pictures of such a thing, but to appreciate the physical strain on the bearers the journey has to be made by oneself Sometimes the journey is so arduous that one complete tour is all that a stretcher party can manage without a long spell of rest In summer time the air is often stifling Under foot are the duck boards or a rough brick pavement The provision of these renders walking more easy, but the surface is necessarily uneven, especially where one board joins another Sometimes a rung is out, and at other times the board is apt to tilt and get up and look you in the face Then there are the innumerable corners formed by the zigzag of the trench and made to stop the enfilade fire and limit the danger of an exploding shell, or to prevent the enemy looking straight down the trench

In winter, or after rain, the surface of the boards is greasy in the extreme, and sometimes they are completely under water At night-time the difficulties as may be well imagined, are greatly increased Sometimes the turns in the trenches are so sharp that the traverses of the stretcher have to be closed in order to allow its passage round the corners

Much ingenuity has been expended in devising stretchers for the easier transit of the wounded man, for getting round corners easily and relieving the work of the bearers, for the strain on the shoulders produces an intolerable ache in the neck In some cases the stretchers are carried on the bearers' shoulders, the wounded man's legs lying in troughs projecting past the bearer's head, the idea being to shorten the "wheel base" as it may be called, of the stretcher party In other cases the patient is carried almost upright on a stretcher that somewhat resembles the back board of a Swiss mountain porter Many wheeled stretchers have been tried, but the inequalities of the ground and the sharp corners to be turned are difficulties which have not yet been overcome Sometimes it is possible to put a man on the trolley line and run him down over the open ground In some cases the trenches have an overhead mono-rail on which a short form of stretcher can be suspended

At the end of the communication trench the patient comes to the advanced dressing station This, as a rule, is more spacious than the regimental aid post, but is often similar in construction Sometimes it is a ruined château—not quite the place that the word château may possibly call to your mind—a château is often a euphemistic name for a villa which would be equally at home in Clapham Nearly all the houses—even the workmen's cottages—in Northern France have cellars, and these cellars have been really a godsend to the wounded If the accommodation is not sufficient it is increased by dug outs These are made sometimes of heavy timbers covered with earth and sand bags, or at other times with sections of steel tubing commonly known as elephants, treated in the same way At another time a farm or cottage is used Here the cellars are again occupied or the ground floor rooms are made safe by building within them splinter proof shelters formed of steel sheets and sandbags, and in some places where the subsoil water is found at a very shallow level shelter to the wounded is given by building splinter proofs on the surface of the ground, heavily timbered and sand bagged Although the medical arrangements are here a little more extensive and a larger supply of splints and appliances are kept as a rule they are of a simple nature and used only to render the patient's transit as comfortable as possible

Although many wounded men rest here the man with an abdominal wound, if his condition permits is placed at once in an ambulance covered up with blankets, and warmed by hot bottles Here he is quickly taken in a motor ambulance to the tented section of the field ambulance As a rule, the patient will not be removed from the ambulance, but he will be looked at by the medical officer and, if his condition is sufficiently good, at once sent on to the casualty clearing station If the field ambulance happens to lie off the road to the nearest casualty clearing station the patient is as a rule, taken straight to the latter, time thus being saved

The field ambulance or, as it is sometimes called, the headquarters or tented section is usually situated in schools or some sort of public building, sometimes in cellars or dug outs if the neighbourhood happens to be unhealthy Usually such places are not shelled, but they are, as a rule well within the range of hostile shell fire.

The casualty clearing station is the first unit through which a man passes where adequate arrangements are made for operative treatment the tendency being for all units in front of this to be merely concerned in the transport of the wounded or in doing very urgent surgery such as the arrest of hæmorrhage In one of their functions—namely that concerned with operations and after treatment of cases that cannot bear further transport—our casualty clearing stations have become hospitals, and in them are all necessary paraphernalia for the performance of any surgical operation that may be required at this stage They are situated out of the usual zone of hostile artillery fire. They have been established in all sorts of buildings—schools, chateaux, asylums, tents and huts, the arrangements of course, are determined by the building. The tents have this advantage, that you can arrange your hospital as you like. Buildings are very comfortable in winter and are better lighted and more cheery, but very often are not so convenient, especially when the upper storeys have to be utilised. Huts possibly are the best of all, as they have the advantage of buildings and can be arranged on a considered plan. Unfortunately, they are not so mobile as tents.

In the recent fighting on the Somme the tented casualty clearing stations were the rule for the very good reason that no buildings were available. The general plan of these is as follows. There is a large reception room made by lashing tents together to form a dressing room. Here the wounded, arriving off the cars, are carried; here they are examined by the medical officers and particulars taken by the clerical staff. The lighter cases have their wounds dressed and are passed on to a series of tents called the "evacuation area," or they are at once put on to the train in which they travel to the base. The more serious cases are put into the "treatment area" and here their clothes are removed, they are cleaned up as well as possible, fed, and warmed. From here they are taken into the theatre, where their wounds are properly attended to, and from here they pass again into another tent in the treatment area where they remain until ready for transmission to the base.

Many clearing stations have a ward where men arriving in a grave condition are placed and every attempt is made by warmth, food, and adequate means to bring them back into such a condition that they can be operated upon if necessary.

All casualty clearing stations, no matter where situated, have now very large operation accommodation, all of them have space enough to set up three tables at least. Every attempt has been made to provide long wooden huts for the theatres where there is a good light and where an adequate temperature can be maintained. These theatres are adequately furnished with all the appliances which are necessary for the performance of the operations which have to be done in such units. The staff varies according to the work it is called upon to do. The staff in pressure times may be three times the normal establishment, not only in medical officers, but in nurses.

The casualty clearing station has to be put in such a place that it can be easily reached by the ambulance cars and so arranged that the cars can be passed back on a different road from that on which they came or by a road which allows of a double line of traffic. It is either on or near a railway, and by far the best arrangement is where it has a siding on which an ambulance train can stand to which the patients can be transferred by hand carriage straight from the tents to the train. This ideal, however, is not always obtainable, and then the wounded have to be taken by ambulance car to the railhead. This of course means more labour for the personnel and more jolting for the patient.

Relative Frequency of Abdominal Wounds.

Stevenson says in recent wars 15 per cent. of the wounded are hit in the abdomen and about 4 per cent. reach hospital. In the Spanish American War the percentage of abdominal wounds to total wounds was 2·6 per cent. In this present war the actual number of abdominal wounds will never be known, nor is it particularly important.

The number of abdominal wounds admitted to the field ambulance and casualty clearing stations are, subject to certain errors, known. The error is caused by the impossibility of accurately diagnosing the perforating abdominal wound. Since the onset of the operative treatment the error of course has diminished. The numbers as a matter of fact vary with each observer, and a surgeon who believes in the expectant treatment will be inclined to reckon as perforating those wounds which a believer in the operative treatment would place as non-perforating. The following figures were taken in certain casualty clearing stations by careful observation of the [illegible] of [illegible] perforations during a period in which the expectant treatment was paramount:—

Percentage of [illegible] Wounds to Total Wounds.

[illegible] = [illegible] per cent. | [illegible] = 0·7[illegible] per cent.
[illegible] = 1 [illegible] | [illegible] = 0·62 "

If we take the statistics from nine field ambulances and certain casualty clearing stations over a period of six months we get the following figures:—

The Percentage of Abdominal Wounds to Total Wounds.

Field ambulances	...	1·92 per cent.
Casualty clearing stations	...	0·72 "

The difference between the figures in the field ambulance and casualty clearing station is accounted for in the following manner:—

1. The field ambulance will naturally and rightly err on the side of making the graver diagnosis.
2. The mortality was high in the field ambulances, so that fewer cases reached the casualty clearing station.
3. At the casualty clearing station a more careful diagnosis will act in two ways: (1) It will include some buttock, chest, back, and thigh wounds as abdominal wounds; (2) it will exclude many cases of wounds of parietes. On the whole the effect will be to lessen the proportion of abdominal wounds to total wounds.

From these figures, which must be considered only approximate, the important facts stand out—namely, the relatively small number of abdominal wounds that a surgeon is called upon to treat, certainly under 2 per cent. of all wounded. The moral to be drawn is that one must not be led away by one's interest in abdominal wounds to spend more time and attention on them to the prejudice of the far larger number of wounds of a different part of the body. We must constantly bear in mind that all arrangements must be made so that the greatest good is done to the greatest number. If the number of medical men were unlimited this would not apply, but with a limited number of surgeons the best possible use must be made of their services.

Method of Recording Cases.

This paper is based on all abdominal wounds which reached an operating hospital from a certain sector of the line over a period of 18 months. In arriving at a conclusion of the mortality of abdominal wounds and what can be done for them by operative treatment it is necessary to take a sector of the line and to include all the cases, no matter at what hospital they are treated. Results do differ in different hospitals more or less depending upon their distance from the firing line; they will also differ according to the nature of the fighting. Again, if times are quiet there is plenty of time to treat adequately and deliberately all cases. At another time, when active operations are in progress, it may be only possible to pay attention to the most favourable cases. It is also necessary not only to reckon your operative mortality but also to bring into account all cases which arrive too bad for operation. This has been done in the present series. In the case of the moribund cases we have their numbers, but we do not in every case possess details of the injury. The statistics were collected in the following way. Every hospital which was called upon to treat abdominal cases was provided with a book in which certain headings were written down and filled in at the time of operation by the medical officers. In the early days these books were Admission and Discharge Books altered for the purpose. Later on, by the kindness of the Medical Research Committee, we have had supplied books provided with adequate headings which could be quickly and accurately filled in.

Comparative Mortality of the Casualty Clearing Stations and Abdominal Hospitals.

The following figures show the differences in results which may be obtained in different hospitals under different conditions and the necessity of including them all in your statistics if you wish to obtain an accurate result.

The following are the total mortality at four different hospitals during the same battle:—

(1) A casualty clearing station ... ... 54 per cent.
(2) An advanced operating hospital ... ... 30·35 "
(3) An advanced operating hospital ... ... 82·6 "
(4) A casualty clearing station ... ... 72·73 "

(1) A forward casualty clearing station.
(2) Was never pressed. (Mortality here during 7 months was 5[illegible].)
(3) Very heavily worked; many cases arrived late.
(4) A back area casualty clearing station.

Time Factor.

The table below was compiled by dividing the time between the receipt of the wound and the performance of the operation into two-hourly periods and noting whether cases were sent to the base or succumbed to their injuries It mainly shows two things (1) it gives some idea of the time in which cases are got out of the trenches and submitted to operation, and (2) it also shows the effect on the mortality of the time which has elapsed between the receipt of the injury and the performance of the operation It will be seen that most cases arrive some time between 6 and 10 hours after receipt of the injury If over 12 hours the mortality mounts, above 24 hours it appears that there is very little hope of getting a good result

TABLE I —*Effect of Time on Mortality*

Hrs	-2		-4		-6		-8		-10		-12		-14		-16		-18		-20		-22		24+	
	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D
	2	2	13	17	35	21	23	35	18	20	11	12	4	4	3	6	8	10	2	6	0	1	22	43

Hrs = Hours B = To base D = Died

To base		Died	
Hours	Injury	Hours	Injury
24	Colon	6	Small gut and hæmorrhage
57	Bladder	6	" "
24	Sigmoid	5	Gas gangrene of abdominal wall (post-operative)
30	No visceral injury	3	Hæmorrhage
48	"	4	Stomach and duodenum
26	Jejunum	4	Small gut and hæmorrhage
15	Stomach	4	Stomach
65	Rectum—extraperitoneal	6	Multiple wounds
72	Colon	3	Colon

To the table have been added a few cases in which patients have died after an unexpectedly short period and also those in which recovery has followed the elapse of a long period between the receipt of the wound and the operation So far the limit of successful cases has been 36 hours for a resection of the small intestine and 36 hours for a suture of the colon

WHERE TO OPERATE ON ABDOMINAL CASES.

From the operative point of view the sooner the patient is submitted to operation the better From a post-operative point of view it is desirable to do the operation in some place where the patient can be kept quiet and properly nursed It will be seen that for very obvious reasons it is not possible to satisfy both conditions If you were to operate on a patient at the very earliest possible moment it would be in some place where the nursing was bound to be of a very primitive nature It would also have to be in some place which is exposed to shell fire Now, shell fire has a very bad effect on patients, and men who are well nigh careless of its effects when active and in good health are very much upset by it when lying passive in bed Again, you cannot well keep your sisters in such places although on many occasions they have done magnificent work under conditions of this kind Then, again you must consider the greatest good for the greatest number—one must do what is best for the majority The setting out on a large scale of the special advance hospitals means the dissipation of personnel, and medical officers, orderlies and nursing sisters are none too numerous for the work they have to perform Then, again, if you have special hospitals you have to have special arrangements for evacuation It may be stated that the best place for a casualty clearing station is some 10,000 yards behind the line on a railway or canal with good roads leading to it Taking it all in all this is the best place for abdominal surgery Remember that most of the time in getting a patient to an operating centre is spent within the trench system, the road journey is short, and although there will be some shaking in a motor ambulance it will be a good deal less than the patient has already experienced during the period of hand carriage If a patient arrives at a casualty clearing station 10 hours after the receipt of a wound it will most probably be found that only 60 minutes have been spent in traversing the distance from the trench system to the casualty clearing station.

It may be well to say here something about the mobile operating vans They have loomed somewhat largely in the public mind and have been a good deal discussed The idea is that you can have the motor van fitted out as an operating room, and that such a van should seek the patient rather than that the patient should be brought to the theatre. It may be stated at once that this idea is impracticable, and much more time would be spent in getting to the patient than is now spent in getting the patient to an ordinary clearing station When speaking of a mobile hospital van it must be understood that one does not include in this category a theatre which can be rapidly erected, adequately warmed and lighted, such as the French have made use of on many occasions, such units are only meant to be mobile in much the same degree as the casualty clearing stations are mobile On the other hand, special hospitals are very good under certain conditions In the Army to which I am attached Surgeon General Macpherson established two such hospitals and Surgeon General Pike another, and I will briefly describe them

The first one, which we will call No 6, was situated in a bleaching mill, it was about 5000 yards behind the firing line and took all the abdominal wounded of a certain corps It was formed by sending an operating surgeon and an anæsthetist and four nursing sisters to supplement the personnel of a field ambulance which was situated in this building It had a very good theatre and a large ward, which in cold weather was steam heated The evacuation arrangements were under the care of Colonel B M Skinner, the D D M S of the corps, to whose energy its success was greatly due Here we got cases frequently within two hours or less, the patients being carried straight from the spot where they were wounded to the hospital, irrespective of what division they belonged to This hospital was never pressed and never had the strain of a large fight placed upon it It continued to do its good work until the enemy began to pay attention to a bridge which crossed a canal on whose banks the mill was situated Then it was shifted a bit to one side and to another building which was much less commodious There it remained until the area passed out of the jurisdiction of the Army The sisters and operating surgeon and anæsthetist were then moved to a different part of the line and were re established in the ugliest château it has been my misfortune to see It was situated about 9000 yards behind the line and in a very much more difficult sector as far as evacuation was concerned Here it continued to do excellent work, although the railhead and a coal mine near by were continually shelled, many of the shells coming into the garden uncomfortably close to the house It was closed at last, as a casualty clearing station was opened near by Strange to say the day on which it was closed was the last day on which the place was shelled This hospital was also never pressed and the results, as in the last, were very good

The third hospital was opened in a field ambulance just before the onset of a big battle, and it was arranged that all the abdominal wounded from a corps should be brought to it As a matter of fact, in the stress of battle the wounded from two corps were carried to it The result was that the place was heavily worked and the results were not so good as in the last two

I will mention a fourth abdominal hospital, although it was not in the army to which I am attached, because there are some lessons which can be learnt from it Experience had been gained by the overwork of the last hospital and adequate arrangements were made to prevent it in future The personnel of this particular hospital was adequate for its needs In addition, it was arranged that when the hospital became full the wounded should be sent on to a casualty clearing station situated somewhere farther back The result of this arrangement was that all the abdominals that had the good fortune to be admitted were well and rapidly treated

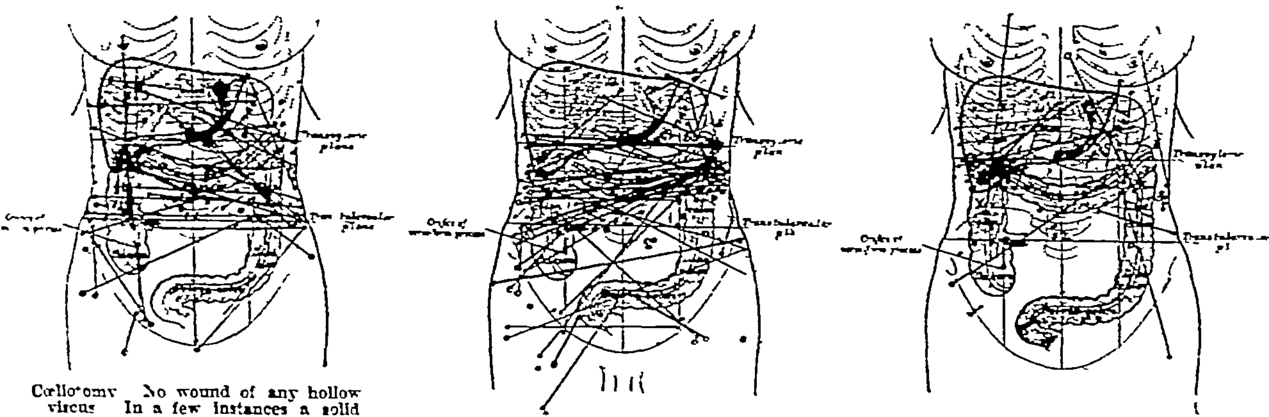
The lesson to be learnt from the experience gained at such hospitals can, I think, be summarised as follows That in quiet times such hospitals opened at field ambulances by the provision of an operating surgeon and a few sisters can do magnificent work and save life If, on the other hand, such hospitals are to be opened in times of battle, it is necessary to have very much the same personnel that is allowed by the establishment of a casualty clearing station

ARRANGEMENTS AT THE PRESENT TIME IN THE FRENCH AND BELGIAN ARMIES

It has been said above that the French and Belgians went through the same experience as ourselves As the line became fixed, operation became the established practice The French have established advance abdominal hospitals

Charts showing the General Incidence of Fatal and Non fatal Gun shot Wounds of the Abdomen

FIG 1. FIG 2. FIG 3



Cœliotomy No wound of any hollow viscus In a few instances a solid organ was hit

No operation Died

No operation Recovered.

These charts were made by indicating an anterior wound by a black mark, a posterior wound by a circle and joining the two when they represented the entrance and exit wounds of a missile

by means of what they call *motor surgical ambulances*, these are really hutted theatres which can be easily erected, and they are really extremely complete in their arrangements These hospitals are pushed rather further forward than is the practice in the British Army and have, I believe, met with a large measure of success

Professor Tuffier also informs me that the French have established dug out operating centres situated some hundreds of metres behind the trenches, where it is possible to operate on the wounded in from a half to two hours after the accident He adds—which is of considerable interest—that with the very large attacks they have had and the great number of wounded they have had to be dealt with, this arrangement has not given very good results, for the reason that the wounded have arrived late, and very often these ambulances have been unable to deal with the numbers of wounded they have received.

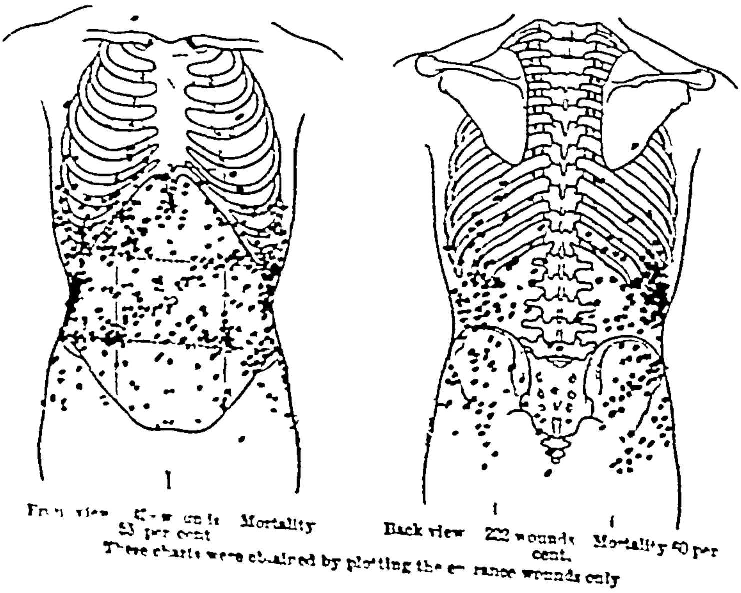
The Belgians have followed suit to a certain degree and have pushed their abdominal operating centres far forward and have lately provided special ambulances for the transmission of the operated man to the hospitals farther back I have not so far ascertained what measures of success they have had but the Belgians are favourably situated in that they have large base hospitals very close behind the firing line

NATURE OF PROJECTILES THAT CAUSE THE WOUNDS

Bullets —There are very many different kinds of bullets used in this war and apparently their number goes on increasing As is well known the standard English French, and German bullet is a pointed one The English and German is a composite projectile which is liable to break up into mantle and core The French bullet is much longer than either of the above and is made of solid copper alloy Although not liable to break up it is liable to very great distortion Naturally we are mostly concerned with the German projectile which as a rule is pointed but sometimes the old ogival headed bullet has been extracted from wounds All the modern pointed bullets are more unstable than the bullets of the Boer War The instability is said to be most marked at the beginning and the end of the flight Again, in this war, where the fight takes place amongst houses, there are many opportunities for the bullet to be deformed and deflected Again the velocity and stability of a bullet is largely affected by passing through sandbags or a parapet, which, as a matter of fact, has to be something like 4 feet thick to be bullet-proof. There is plenty of proof that, whether from inherent instability or from hitting some object, the bullet does spin, and in several cases a bruised impress has been seen on the skin which could only have been made by a sidelong impact of the bullet Again, in those cases where two legs have been wounded by the same bullet the first leg has been perforated by a small standard track and the opposite leg has suffered a large gaping wound, the obvious explanation being that the bullet in passing through the first limb was made to *spin* and so caused a more extensive wound on the opposite member A good deal has been heard about the explosive effect of the modern pointed bullet, and although one may say that it does cause worse wounds than the ogival-headed projectile, I am by no means persuaded that its so-called explosive effect is anything but a very rare occurrence I am strengthened in this opinion by the study of accidental wounds, of which one sees a great number Men are shot at all sorts of close ranges up to actual contact and yet unless a hard bone is touched it is not usual to get the explosive type of wound

Charts showing the Regional Incidence of Wounds

FIG A FIG B



Front view [illegible] wounds Mortality 53 per cent

Back view 222 wounds Mortality 60 per cent.

These charts were obtained by plotting the entrance wounds only

Shell fragments —These are of course, of all sizes, but the fragments which are the cause of the abdominal wounds that the surgeon is called to treat are generally not more than 1¼ inches in the greatest diameter, usually a good deal smaller There are different kinds of shells used, and some importance may be attached to the nature of the shell by which the man is wounded

High-explosive shells —These shells may burst in the air, on contact with the ground or after they have impacted themselves deeply in the earth The velocity of the fragments into which the shell is blown depends on the disruptive charge, and the fragments under such a condition fly out in all directions The shape of the fragments depends largely on the type of shell—if the shell is segmented the pieces are more or less quadrilateral, if not segmented they have extremely sharp and ragged edges Such shells, bursting on the ground, naturally become covered with dirt

Shrapnel—These shells usually burst in the air with a time fuse They are of all sizes and the leaden balls with which they are filled also vary somewhat in size The penetrating power of such balls is due tó the remaining velocity of the shell The direction of the shrapnel balls will, as a rule be downwards In some cases apparently a shell is of a combined high explosive and shrapnel type

Bombs and grenades—In the early part of the war these bombs were often extemporised and consisted of tin boxes filled with an explosive, scrap iron cobblers' nails, and screws &c Now a days they are made of iron, the surface of which is marked with grooves, so that on explosion they break up into quadrilateral fragments Sometimes the force of the explosive will cause a bomb to burst into smaller fragments so that often they are no bigger than a big match head These fragments, although small, have apparently from their high velocity, a very great penetrating power in the immediate neighbourhood of the explosion, although this is rapidly lost as the distance increases

Trench mortars—These are of various shapes, but consist essentially of a very large high explosive charge with a comparatively thin containing envelope, they therefore burst very often into large ragged fragments as well as minute ones They are generally timed to burst either on the ground or in the ground

Bayonet wounds—These are very seldom met with, being usually fatal on the field Mention may be made of two cases In the first the bayonet penetrated the man's back and came out by his umbilicus No viscus was injured and the man succumbed to hæmorrhage The second was the case of a man who was late in answering a challenge and was bayoneted by the sentry The bayonet entered the left hypochondrium and wounded the stomach near the greater curvature and entered the back wall of the abdomen Though promptly operated on he died, not of his stomach wound but of retro peritoneal sepsis

RELATIVE NUMBER OF DIFFERENT PROJECTILES AND THE PROPORTION RETAINED

Table II has been drawn up with the intention of giving some idea of the relative frequency of the different projectiles met with in abdominal wounds, it also shows the relative number retained in the body Now this table must be taken as only relative for several reasons In the first place it is often impossible for a man to tell what hit him In the second place one cannot always be sure from a study of the entrance and exit wounds what was the nature of the projectile, and again, many do not differentiate between high explosive shell and shrapnel, the soldier generally including most shells which are not of a large calibre under the name of shrapnel As a matter of fact, there is very little difference in the nature of the fragments in high explosive shells, bombs, rifle grenades or trench mortars if one excludes the larger fragments with which we are very little concerned

TABLE II

Bullet		Shell fragment		Shrapnel		*Bomb or grenade*	
Out	Retained	Out	Retained	Out	Retained	Out.	Retained
181	103	24	151	10	62	6	82
284		175		62		88	

Bullets—Bullets and high explosive shells furnish a large proportion of abdominal wounds More bullets pass through the body than other projectiles The reason for this is obvious The causes for retention are not so obvious, and I have known bullets fired at a comparatively short distance remain within the body In other cases the bullet may have passed through the earth and so have had its velocity diminished Ricochets account for a certain number

Shells—These show a high proportion of retention This is obviously due to the shape of the fragments Shrapnel shows a large proportion, and this is no doubt due to the small velocity and round shape

Bombs and grenades—The retained fragments are strikingly in excess of those passed out The large proportion of retained fragments at once suggests the possibility of armour, and no doubt armour could be devised which would keep out many fragments It really is more or less a question of what the soldier is able to carry One cannot help being struck with the resistive power of an ordinary book, as one has often seen projectiles arrested by such articles when carried by the soldier The great saving of life produced by the steel helmet makes one hope that something could be produced which would be equally efficacious in protecting the body Although we could not expect such shields to be supportable and bullet proof yet the number of passed out bullets is far out numbered by the number of retained bullets, shell, and bomb fragments which possess far less penetrative power

RELATIVE MORTALITY OF THE DIFFERENT PROJECTILES

TABLE III

Bullet		Shell fragment		Shrapnel		Bombs or grenades	
To base	Died.	To base	Died	To base	Died	To base	Died
60	63	46	68	10	21	30	31

There is nothing very much to be learnt from this table except that bullets are as dangerous as other projectiles and that bombs and grenades seem to be the least noxious

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THE IMPORTANCE OF

THE DIAGNOSIS OF ENTERIC FEVERS BY AGGLUTININ DETERMINATIONS

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(*Report to the Medical Research Committee*)

IN the course of recent criticisms directed to this subject several points of interest have been raised, and some misapprehensions have become evident which it may be of advantage to consider briefly They are dealt with in the order of their publication

I —In a discussion on "The Technique of the Agglutinin Test" Dr P N Panton[1] strongly dissents from my contention that "the microscopic method entirely fails *to give comparable quantitative measures of the titre of a patient's serum on successive occasions*" He considers the microscopic technique commonly employed to be fully adequate for this purpose In defence of this view he expresses certain opinions regarding the constancy of the materials employed, the general accuracy of the microscopic technique and other matters whose validity ought not to pass unchallenged Yet merely to deny Dr Panton's statements categorically would not assist in illuminating the subject, while to explain in detail *ab initio* the reasons why they are misleading would require not only a repetition, but also a *considerable* amplification of my previous Note[2] *For he places* one in this dilemma that he makes *statements* contradictory of well established *evidence much* of it old and quite familiar, but at the *same time* he *omits* to adduce any experimental data in support of his position, such as could be submitted to critical analysis In some cases he seems actually to be unaware of the factors which militate against accurate quantitative results in the *performance* of agglutination tests For example, he *still* (so far as one can judge) makes the *successive* dilutions of a serum by adding more and *more* bacillary suspension, in apparent unconsciousness of the effects of the mass influence *of bacteria on* the absorption of agglutinins These *effects* however *are* such as to render it essential that the serum whatever its dilution, shall always operate on equal masses of bacteria if accurately quantitative *observations* are desired Fortunately many of *Dr Panton's* arguments have already been admirably dealt with by Glynn[3] It may therefore suffice upon the present occasion to meet his contentions regarding the value of the microscopic method for the purpose under discussion by examining its performance in the only direction in which he has brought forward definite experimental evidence These observations of his own afford very valuable information For though he himself interpreted them guardedly as evidence in favour of the exploded theory that in inoculated persons any febrile condition of a certain duration causes or may cause, disappearance of the inoculation agglutinins they serve in reality quite a different purpose They prove to demonstration that the microscopic method as employed by him cannot for accuracy and reliability support any comparison with results obtained by the use of Dreyer s macroscopic technique Indeed his figures show that the results obtained by the microscopic method, even as regards the mere detection of agglutinins without considering the question of their measurement, are very much worse than one would have ventured to suggest was probable had these data not been supplied. The results of typhoid agglutination tests are recorded by Dr Panton for 72 out of 100 consecutive cases in inoculated individuals who had suffered from various febrile conditions They are tabulated below alongside the results for the first 100 similar cases examined by myself by Dreyer s method

Cases examined by the microscopic method (Panton)		Cases examined by Dreyer s method (Ainley Walker)	
Typhoid agglutination.	Per cent	Typhoid agglutination.	Per cent
"Completely negative"	62	"Nil, 1 in 25	0
"Negative or partial."	16 7	"Standard " or trace 1 in 25.	3
"Positive."	20 8	"Standard," 1 in 50 or more.	97

By Dreyer s method every case showed measurable quantities of agglutinin in 1 in 25 dilution of the serum, and 97 per cent showed marked agglutination visible to the naked eye in at least 1 in 50 and frequently in very much higher dilutions But in the cases examined by Dr Panton by the microscopic method the test was "completely negative" in nearly two-thirds and "positive" in only about 21 per cent Nothing could be more convincing as regards the relative delicacy reliability, and general accuracy of the two methods for the detection of agglutinins A fuller justification could indeed hardly be found for my criticisms of the microscopic method than that here provided by Dr Panton s own observations

II —In a letter to the Editor of THE LANCET Captain R P Garrow[4] makes some interesting comments on my recent "Illustrations of the Diagnostic Value of Agglutinin Determinations"[5] And one may certainly be permitted to endorse his plea for judgment and caution in the interpretation of the results of agglutination tests particular regard being had to the methods employed Probably we are much more nearly in agreement than the incisive character of some of his expressions might suggest. But in charging me with ignoring clinical observation as a means of diagnosis in enteric fevers he misunderstands me My article was not concerned to discuss the clinical diagnosis of enteric fevers To do so would be quite beyond my province The point which it was desired to emphasise is that when and wherever these infections are abroad many mild and atypical cases may occur which are *not capable* of diagnosis by clinical observation alone Moreover in every case the differential diagnosis between typhoid, paratyphoid A and paratyphoid B still rests and is likely to remain with the pathologist The cases charted in my article purposely included a number of such mild or atypical attacks And the fact that among the mass of cases which receive the provisional diagnosis pyrexia of uncertain origin cases of enteric fever may be numerous and important that they form a grave source of danger and that the agglutination test (even as commonly applied) affords the best criterion for their diagnosis is emphasised by competent authority as follows (all italics mine) —

> [illegible] Typhoid Fever [illegible] is an exceedingly [illegible] group especially [illegible] The cas may be divided into two classes, the first including those characterised by a mild and short course the other those in which despite the short course the onset is severe .....*In many instances these mild forms are taken for malaria* mountain fever &c., while doubtless they are not uncommonly put down as *febricula* ... The recognition of this group comes through one of two ways They may show characteristic signs ... *or be recognised only through the routine Widal reaction* .. ..We are not sufficiently impressed with the importance of this group. Keeping their frequency in mind, the physician will watch more closely *and have the agglutination reaction tried more frequently* in patients with mild fever ...... *For the community the recognition of this group is most important* .... "

If the foregoing statements were valid before the introduction of protective inoculation much more are they so in relation to the character of enteric infections in inoculated persons, among whom the relative proportion of mild, abortive, and atypical attacks will naturally be higher than among non inoculated individuals Thus it appears that in urging the importance of relying on agglutination tests for diagnosis in such cases one is not guilty of ignoring clinical observation, but can claim the strong support of clinical teaching

That the facts thus indicated were quite fully recognised by experienced observers who have worked upon the epidemiology of enteric infections is illustrated in the subjoined quotations from an article by Grattan and Wood[6] on paratyphoid fever in India, where the case is stated plainly and with great cogency

> In the first place owing to the mildness of the disease in some instances patients are not diagnosed paratyphoid but influenza, tonsillitis, pyrexia of uncertain origin rheumatism or pneumonia, with the result that they are sent out of hospital within a few weeks of going sick and may return to barracks while still infectious. In the second place such convalescents are frequently sent with other debilitated men to the hills during the hot weather and thus the hill stations where men of several corps mix together may serve as distributing centres of the disease. Furthermore, the ambulant case is in reality ..... "
>
> An epidemic is started from one acute carrier the nature of whose illness is not recognised owing to its mildness He infects other men, some of whom are recognised as cases of paratyphoid others again, are not diagnosed, and possibly others never report sick at all. These men soon return to barracks and come in contact with other men in soldiers homes, &c. and though probably only infectious for a few days manage thus to disseminate the disease "

With regard to the interpretation of agglutination results Captain Garrow expresses so clearly exactly what ought to be done in carrying out an investigation of this problem that his terms may well be quoted (italics partly mine) —

> ... blood culture should be performed at once .... Whatever the result of the blood culture, agglutination tests by a strictly quantitative method should be performed and repeated at suitable intervals. ... The object of this procedure in a case in which an absolute diagnosis by blood culture has been obtained is ..... to furnish *agglutination results controlled by blood culture The data so obtained are essential as a guide to the interpretation of agglutination results in other cases* in which blood culture has failed to give a diagnosis .... "

But Captain Garrow appears to have overlooked the fact that this fundamental work is precisely what has already been done on a very considerable scale And there comes a time in the conduct of investigation when the evidence accumulated seems to be sufficient to convince observers that the guide thus obtained may be relied upon, and that the problem may in certain aspects be regarded as solved Now the evidence obtained by Dreyer[7] and his co-workers in very long series of cases is that *in every case* bacteriologically proved to be typhoid or paratyphoid B, and also in similar cases of paratyphoid A (since the low level of agglutinin titre found even at the maximum in many cases of this infection was fully recognised), the diagnosis independently arrived at by means of agglutination tests carried out by Dreyer s method was *proved* to be correct Results of such a character may fairly be termed a *uniformly accurate diagnosis* They would seem to justify my statement—not in the extravagant interpretation placed on it by Captain Garrow "that agglutination tests alone *invariably* furnish an *absolutely infallible* diagnosis"—but in the form in which it was made and with the limitations carefully specified in the article that such tests " can be made to yield a uniformly accurate diagnosis in cases examined during active infection " The limitations specified and repeated from a previous article by Dreyer and myself[8] were that a diagnosis should not be based on a rise of titre of only 100 or 200 per cent if it is clear that the maximum of that rise falls markedly outside the period sixteenth to twenty fourth day of the disease We further stated that so far as experience at present goes if a regular rise and subsequent fall even of only 100 or 200 per cent occurs in the typhoid (or paratyphoid) agglutinin titre of the serum and its maximum clearly falls between the sixteenth and twenty fourth day from the onset of illness, the case is likely to be one of typhoid (or paratyphoid) infection It would be prudent, therefore, that it should be so regarded under present conditions, when the circumstances are such that it is a prime object to prevent the escape of undetected carriers For every case that is missed is a potential carrier of infection

Captain Garrow further takes exception to my use of the graphic method in joining successive points on the charts of agglutinin titre by *curved* lines, which he terms "figments of imagination" Here he is rather led astray by a telling phrase It is, of course, in one sense never possible to do more than speculate (more or less logically) regarding the course of nature between points of observation One was therefore careful to speak guardedly of these interpolations as "curved dotted lines *to indicate approximately the probable form* of the agglutinin curve" But it is surprising that Captain Garrow should express a desire to see the points jointed by *straight* lines For a little more consideration would have shown him that such straight lines would not only equally be figments of imagination, but they would also be deliberately *misleading* If there is one fact more than another that has been firmly established for years, it is that both the rise and fall in the agglutinin titre of the serum follow *curves* Why, then, draw straight lines if one wants to illustrate what one thinks is probably occurring between points of observation?

To turn briefly for a moment from the general to the more particular Captain Garrow very properly draws attention to a bad slip of the pen in a recent article by Professor Dreyer and myself in stating the maximum of a curve lies between the two highest readings, when we should have said on one side or other of the highest reading But, as he notes, the correct principle is followed in my charts In reference to Chart 6, in which the T estimations exhibit a progressive fall, the reason why a maximum is placed between the first two readings is that, as can be seen at once by plotting out on a large scale, a smooth curve through the last five points will not pass through the first Incidentally, this shows how information is gained from the use of *curved* lines of interpolation In Chart 10 the reason for the diagnosis "clearly a case of B infection" is given in the letterpress attached, if read in conjunction with the whole of note 3

Case 4 of my article receives some special criticism In publishing this chart attention was drawn to the fact that the case had "simulated a tertian ague" It was selected for publication partly to illustrate the fact (see Osler and McCrae above) that such cases may be *mistaken for malaria* The clinical data given were a headache, a shivering fit accompanying the first sharp rise of temperature, and two more sharp rises of temperature on the third and fifth day (though without definite chills) The blood was examined for malarial parasites, but none were found, and a *typical typhoid agglutinin reaction was observed*, as shown in the chart On this evidence Captain Garrow regards the case as one of malaria, but it is quite impossible to assent to such a diagnosis The patient came from the Mediterranean area, where he had had prolonged fever, associated with severe intestinal disturbance, and he appears to have suffered at any rate, from paratyphoid A and paratyphoid B infections (mixed or consecutive, *vide* chart) There was no indication of malaria in his history, and he had been three months in England when he was seized with the brief pyrexial attack under discussion and developed an extremely characteristic typhoid agglutinin reaction of moderate grade Captain Garrow writes in a way that might convey the impression that he supposes every brief tertian periodicity of pyrexia with a chill at the onset to be necessarily of malarial origin But he is, of course, aware that this is not the case Repeated chills may occur, with or without marked periodicity, in various stages of enteric fever (to go no further afield) *vide* Osler and McCrae, loc cit, p 115, where a chart of enteric fever is given, *showing seven successive periodic chills* (cp also Osler and McCrae, p 105, and Allbutt and Rolleston's "System of Medicine," 1905, vol i, p 1108 and p 1132)

III —Captain H Graeme Gibson's letter in THE LANCET of Jan. 13th, 1917 (p 78), follows quite a different line of criticism In effect the letter pointedly suggests that Dreyer, Ainley Walker, and A G Gibson have ignored or are ignorant of (it is not clear which is intended) certain earlier work, which had proved long before the same facts as they imagine themselves to have established more recently In doing so it, of course, tacitly admits that the facts in question have become established, and on this account its appearance marks an important stage in the gradual crystallisation of opinion regarding the diagnostic value to be attached to systematically repeated and (exact agglutinin determinations But Captain H G Gibson is entirely mistaken in his conclusions

Medical science is deeply indebted in very many directions to the admirable studies carried out by officers of the Royal Army Medical Corps, and it is a matter of particular regret to the present writer that he is compelled—not, be it noted, by any claim or action on the part of authors themselves, but by the misleading charges advanced (however disinterestedly) by Captain H G Gibson — to bring under criticism work which constituted at the time a valuable and successful endeavour to advance knowledge in regard to enteric infections, particularly in the domain of epidemiology This task, which is not undertaken lightly, is rendered personally somewhat less repugnant by the fact that, whatever share may be assigned to his co-workers, any results which may have been attained by the Oxford School of Pathology are pre-eminently due to the scientific insight and experience of my friend and colleague Major Dreyer now absent on active service

The statements contained in Captain H G Gibson's letter may now be dealt with Dreyer, Ainley Walker, and A G Gibson did not ignore the earlier work referred to

1 There is no suggestion in any of the authorities whom Captain H G Gibson quotes either of the need for accurately quantitative measurement of agglutinin titre, or of a technique and materials by means of which such measurements could be made

2 Nor is there either the statement, or the evidence to prove it, that reliable diagnostic data can be secured by the systematic repetition of exact agglutinin determinations at appropriate intervals—three to five (or more) successive determinations at intervals of from three to five days

3 The curves reproduced by Captain H G Gibson marked no new departure in pathological investigation For accurately determined curves of agglutinin titre had been published, at any rate since 1902, by Madsen and Jörgensen, Dreyer and Schroeder, Widal, Dreyer and Ainley Walker, and others, before the appearance of the communications referred to, and were presented in greater detail and with more exacitude

4 The problem of the diagnosis of enteric fevers in inoculated men by means of agglutination tests became important in India and elsewhere from the period of the re introduction of typhoid inoculation in the Army in 1905, but it remained unsolved, although the key to its solution had been provided in the work of Madsen and others just mentioned and in the improvements in technique devised by Madsen and by Dreyer

5 As regards the observations of Grattan and Harvey[10] and Grattan and Wood *we made reference to them* where they were germane to the purpose in terms of which the opening sentence ran as follows" —

> "It is in absolute agreement with the important and careful observations carried out by Grattan and Harvey, and Grattan and Wood some years ago in their investigation of paratyphoid fever in India."

6 As concerns the quotations taken from reports on the enteric fever depôt at Naini Tal, they do not represent the views which we maintain. Had we referred to them it could only have been to express our very strong dissent from a number of their conclusions—for example

Naini Tal Reports	*Comment*
In paratyphoid fever the Widal reaction is *invariably* raised for the *B typhosus*"	It is not *invariably* raised
"In all cases of fever in inoculated men the blood should be taken *near the beginning* and *towards the end* of the fever If the two results are the same the case is probably not enteric."	This is not necessarily true for a marked rise and fall in titre may have occurred between two such distant determinations We regard three determinations as the normal minimum And we should consider it quite deplorable to wait until towards the end of the attack before attempting to secure a diagnosis.

In opening his criticism Captain Gibson takes exception to a statement of ours which offered a very moderate presentation of the facts existing at the time when it was written (December, 1914). He states that since 1905 repeated observations of the serum agglutinin content taught at the Royal Army Medical College "*and carried out* by Army bacteriologists" But the first sentence of his own quotation from the Naini Tal reports throws an interesting light upon the latter claim, and in itself goes far to justify our statement

Statement by Dreyer Ainley Walker and Gibson	*Naini Tal Report.*
It is probable that the absence of accurate diagnosis in the past explains the fact that statistical results arrived at in our Army have *not always* been so convincing as would otherwise have been the case "	"Some of these *errors in diagnosis* are due to the fact that the men had been inoculated and therefore their blood gave a positive Widal reaction and they were *diagnosed enteric fever on the strength of this alone* "

Captain Gibson then proceeded to urge that—

> The necessity for using Dreyer's technique is not apparent, and equally reliable results can be and have been obtained when using *living* suspension of bacilli *provided the suspension is standardised* "

This shows that the writer has failed to understand what is meant by *standardisation of the agglutinability* of a bacterial suspension The standardisation of the agglutinability of living suspensions is no doubt theoretically possible, but for any practical and routine purpose it is quite out of the question Indeed, one is almost driven to the hardly credible conclusion that, with Dr Panton, Captain Gibson supposes the determination of a given opacity or number of bacilli present per c c. of the suspension to constitute the standardisation " of an agglutinable culture

At the end of the letter a case is stated against Dreyer in error, and with a degree of injustice which might have been avoided had the writer studied more attentively the authorities he quotes He points out that Grattan and Wood mentioned in 1910 the frequency of *low* titre of serum in paratyphoid A, and would appear to suggest that Dreyer was still ignorant of this fact in 1915, although Grattan, Dreyer and Wood had been working together This suggestion is based on Dreyer's statement that "for a considerable time I did not know *how low* is the agglutination given by paratyphoid A in certain cases " But the explanation lies in the meaning of the words "*how low*" and in their context Grattan and Harvey[10] found in 7 of their 8 cases "*low* dilutions (20 to 40), and always incomplete." Grattan and Wood[6] mentioned that they *had seen* cases where the agglutination did not reach 1 in 10 Their statement with regard to diagnosis in paratyphoid A is given below, along with the *context* of Captain Gibson's quotation from Dreyer

Grattan and Wood[6] *(1910)*	*Dreyer*[7] *(1915)*
a positive agglutination for this organism in a dilution of *1 in 10* is in our opinion *very strong evidence* of the nature of the patient's fever	One had always taken *1 in 25* as the limit below which no positive diagnosis should be made But in the case of paratyphoid A that is wrong If one uses standard cultures and follows the technique laid down for their employment, I am now convinced that an agglutination of *1 in 10* is for all practical purposes *diagnostic* in cases of paratyphoid A

This (1 in 10) was *the degree of lowness* of titre for positive diagnosis of which Dreyer (and everyone else) was previously unaware And no one had ever before suggested that paratyphoid A could be diagnosed with certainty (in non inoculated and T inoculated persons) on so low a titre So far was the fact from being already familiar that Leishman[11] was even then unable to accept it remarking with regard to this conclusion of Dreyer, "Personally I think he goes too far because of the very low dilutions to which he attaches importance ' Dreyer Grattan, and Wood worked in association for a considerable period, and ample time has passed since Dreyer's statement was made for Grattan and Wood themselves to have drawn attention to any infringement of their priority had such existed It can constitute no breach of confidence of any kind to state that Lieutenant-Colonel Grattan and Captain Wood were the first officers in the Royal Army Medical Corps to recognise fully the value of Dreyer's method and to make use of it consistently.

References —1 Panton THE LANCET 1916, ii., 750. 2. Ainley Walker: THE LANCET 1916 i., 17 3. Glynn: THE LANCET (Correspondence) 1916 ii., 877 4 Garrow: THE LANCET (Correspondence) 1916 ii 1037 5 Ainley Walker: THE LANCET 1916, ii., 826. 6. Grattan and Wood Journal of the R A M C., xvii 1-3. 7 Dreyer: Proceedings of the Royal Society of Medicine 1915 Medical Section, p. 10. 8. Dreyer and Ainley Walker: THE LANCET 1915, ii., 419 9 Dreyer Ainley Walker and Gibson: THE LANCET 1915 i 324 10. Grattan and Harvey Journal of the R.A.M.C., xvi. 9 11 Leishman: Proceedings of the Royal Society of Medicine 1915 Medical Section p 19

AN EASY AND RAPID METHOD OF

DETECTING PROTOZOAL CYSTS IN FÆCES BY MEANS OF WET-STAINED PREPARATIONS

BY ROBERT DONALDSON, M A, M B EDIN, F R C S EDIN, D P H

BACTERIOLOGICAL SPECIALIST WAR HOSPITALS READING PATHOLOGIST ROYAL BERKSHIRE HOSPITAL, READING ETC

IT is of the highest importance to single out from among those previously infected or exposed to infection the small but dangerous minority who form the little band of *histolytica* carriers This involves the expenditure of an enormous amount of time on the very necessary routine examination of all suspected fæces in order to detect the presence of protozoal cysts, more especially those of *Entamœba histolytica* To fix and stain films from each of the large number of specimens requiring examination is impracticable owing to the amount of time involved

The usual method of detection is to examine wet preparations, which is done, as a rule, in one of the two following ways Having determined the existence of cysts by their higher refractility in a wet film preparation of fæces in normal saline, another similar film is made in which, however, the saline is replaced by Gram's iodine This method obviously involves the making of two separate films In the alternative method the first step as above described is omitted, and only a wet Gram's iodine preparation examined The object in using iodine is to bring out sufficient detail—more particularly the nuclear structures—in order to differentiate between cysts of *Entamœba coli* and *histolytica* respectively

These methods are open to two important objections The first, involving as it does two separate preparations, takes up too much time In the second place, as the iodine in both methods stains the food débris more or less deeply, there is not sufficient colour contrast between the cyst and the débris surrounding it to enable it to be singled out rapidly and with certainty Where cysts are very few in number, even an expert at such examinations may miss the occasional cyst on which a diagnosis alone may rest, while those less expert must spend a considerable amount of time carefully scrutinising everything in the film, and even then will probably frequently be in error The lack of contrast in such preparations where there is so much similarly stained material to distract the eye, necessitates considerable concentration on the part of the observer, involving a greater expenditure of time and labour, and consequently allowing a greater loophole for error

In order to reduce the amount of time spent on such examinations to a minimum and to render it almost impossible for even a novice to fail to detect the presence of cysts, I have devised the following stain mixtures. After trying various proportions, it has been found that a mixture of equal parts of the two stains used in any of the three following combinations will yield the best results

A Five per cent aqueous solution of KI saturated with iodine to which is added an equal volume of either—

B (1) A saturated aqueous solution of rubin S, or
(2) A saturated aqueous solution of eosin, or
(3) Stephens's scarlet writing fluid

(*Note* —1 I have found it necessary to specify this particular brand of red ink as some brands are useless for the purpose 2. Basic fuchsin cannot be used)

A few loopfuls of one of the above stain combinations are placed on a clean slide, a loopful of fæces taken and rubbed up with the stain to form a fairly smooth suspension, and a clean cover slip gently lowered over the drop To get the best possible definition it cannot be emphasised too strongly that the film so made should spread out under the cover slip by capillarity so as to form the thinnest possible layer—preferably a layer which is no thicker than the diameter of a *coli* cyst. Obviously no gross particles must be left in the film, otherwise the cover slip will not lie flat The exact amount of stain to place on the slide will soon be learned after one or two attempts and will depend on the size of the platinum loop employed and the size of the cover slip It is also preferable, although not essential, to mix afresh for each day's use the two elements of the combination stain

I wish to point out that the way in which the film is made is a point of considerable importance, especially where rubin S or, to a less extent, eosin has been used in the combination , for if the layer of fluid between the slide and cover slip be too thick the superfluous film of fluid overlying the cyst tends to render the latter less bright In the case of cysts of the size and shape of *E coli* or *histolytica* this makes very little difference but if one is hunting specially for cysts of *Lamblia intestinalis*, and still more of *Tetramitus mesnili*, the colour contrast is not so marked owing to the smaller size of the cysts and the consequent thicker red layer of fluid overlying them Where the worker has not acquired sufficient dexterity in making such a film the difficulty may be got over by his using rubin S or eosin of only half saturation in the stain combination, or by employing the scarlet writing fluid above mentioned In this way the effect of the super imposed deeper red is to some extent obviated

Another point to be noted is that where pressure has been applied to the cover slip to cause the film to be spread out, many of the cysts, especially those of *Entamœba coli* will be seen stained red by the red element of the stain combination This is due to the fact that the cystic sphere is very easily ruptured, thus allowing the red stain to penetrate Close examination of such red cysts will invariably demonstrate some rupture in the continuity of the cyst wall, which, as long as it remains intact, prevents the penetration of the red dye Outside such cysts part of the contents or one or two nuclei can often be seen lying more or less closely apposed to the rupture While the vivid contrast between cyst and background is not so marked as in the case of non ruptured cysts it is nevertheless almost impossible to miss recognising them, as they stain a deeper tint of red than the surrounding background, while the nuclei are just as distinct and as easily demonstrated as in the unruptured cysts It is here not a question of the cyst being degenerated but merely of the healthy cyst being ruptured With the eosin or ink combination such a cyst stains a bright cherry red, while with the rubin S combination it is more of a terra cotta tint

In a wet preparation stained according to the above directions, there is a more or less homogeneous red background from which the cysts stand out as brilliant yellow or greenish yellow spheres which even the veriest tyro cannot miss seeing Such cysts have a very sharply defined outline which in the case of *coli* and *histolytica* cysts appears, in the rubin S combination, using daylight as the illumination, as a sharp deep purple ring In the case of other cysts this well recognised outline is not so deeply coloured although it is still tolerably sharp The nuclear structures in the cyst stand out as prominently as with the old simple iodine method Of course, where the light is too strong it may be necessary to close the iris diaphragm slightly to bring the nuclei into relief

The method of stain which I here recommend is not, I need hardly say a stain which will allow of a differentiation between cysts of *Entamœba coli* and *histolytica* respectively The various points which in doubtful cases must be considered before a definite opinion can be given must be gone over in specimens treated with the above stain combination equally as in the simple Gram films Where the examiner feels that it is necessary to measure the diameter of the cyst in order to differentiate between *E coli* and *histolytica* respectively the wall of these two types of cyst is so sharply defined and so prominent—as above mentioned—that with an eye piece micrometer measurement is easily and accurately made inasmuch as the halation seen in simple Gram stained preparations is completely eliminated

Although it is not pretended that the new stain combination can be definitely used as a means of distinguishing between cysts of *E coli* and *E histolytica* respectively, there are one or two points about the staining properties which, to one who has examined many specimens suggest the possibility of differentiation although I am not prepared to say at present that in every case these can be relied on solely In the case of cysts of *E coli* and *E histolytica* and of the so-called iodine bodies to take the cysts most likely to require differentiation there is to the practised eye a slight shade of difference in the colour tone of the first two as compared with that of the iodine body There is a less vivid colour in the case of *histolytica* as compared with *coli* which is the most brilliant object of all in the field with the exception of plant hairs With a low power the nuclei of *coli* cysts are easily seen as a rule while those of *histolytica* are less evident The iodine body appears less vivid than the *histolytica* cyst, probably partly by reason of the large iodine-stained masses which it contains Its luminosity is less Even with a low power, however, it is easy to differentiate the so-called iodine body from *histolytica* or *coli* cysts, inasmuch as the first-named shows a well-defined round body at one pole which stains a very intense brown colour Its outline is so sharply defined and its depth of colour so intense that it is easily differentiated from the immature *coli* or from the *histolytica* cyst, which happens to contain a vacuole which takes up the iodine stain Such a vacuole is rather diffuse, has no sharply marked outline, and is such a faint brown tint that its margins seem to shade off into the surrounding colour of the cyst Another point of difference between the so called iodine body and the cysts of *coli* and *histolytica* is that the outline of the first-named is not represented by such a definite and sharp deep purple line

There is an indication also of a slight difference between cysts of *coli* and *histolytica* respectively on close examination of the contents Cysts of the latter type seem to present a slightly more granular appearance than those of *coli* This lessened granularity in *coli* cysts may partly account for their extremely vivid brilliance In this connexion it is interesting to note that the granularity of the so-called iodine bodies appears to resemble that of *histolytica* cysts, and this together with one or two other points might suggest some definite relationship between the two I do not, of course, mean to say that because of this one supposed similarity the so called iodine bodies are to be regarded as *histolytica*

It is to be noted that apart from using a combination stain mixed fresh each day it is also of importance to see that too much food débris is not used to make the film preparation Where this precaution is neglected the iodine may be all absorbed by the gross matter present, leaving the cysts perfectly colourless A little practice in making just the correct type of film will obviate this

The only other objects likely to be met with besides protozoal cysts which take on this vivid greenish yellow are plant hairs and a few mould spores The former, described in a former paper, are easily recognised for what they are,[1] while the latter can be differentiated from cysts by their shape or size and by the absence of the characteristic markings of the various types of protozoal cyst The vivid colour of plant hairs suggests that the walls of these protozoal cysts are composed, like the plant hair, of cutin *Blastocystis hominis* on the other hand, always stains a cherry red or terracotta colour according to the stain combination used The large vacuole which is here contained takes on the same tint as the background while the nuclei pushed to the side stain deeply, as described in the last sentence They are of vegetable origin and possess very thin walls, and with the combination stain described in this paper it is impossible for them to be confused with true protozoal cysts, as is sometimes done by the inexperienced when the simple iodine stain is employed

What are probably dead leucocytes stain apparently varying tints of brown to greenish yellow All the other débris takes on a more or less brownish tint, while bacteria remain practically unstained, or, if they do stain the deep red background in which they are prevents them owing to their size, from becoming obtrusive and so distracting to the eye

The background, therefore in such preparations is a more or less homogeneous shade of red according to the kind of stain combination used in which the bacteria, for the reasons given above do not force themselves on the vision, while the larger particles of débris owing to their tint, do not obtrude themselves on the eye The only objects which stand out in such glaring contrast with this background are the protozoal cysts especially those of *coli* and *histolytica* plant hairs and to a less extent the iodine bodies and a few mould spores

I wish here to emphasise the need for employing the strong solution of iodine above mentioned in the stain combination Even in preparations made with iodine alone, this will be found to be a great improvement on the ordinary Gram strength iodine as nuclear and other details are much more strongly brought out

The tint of the background varies according to the stain combination used Rubin S necessarily gives the deepest red, eosin is deep with rather more yellow in it while the Stephens's scarlet writing fluid is similar to the eosin but less ntense and a more marked yellowish red To get the best colour contrast between background and cyst wall it is a matter of great importance to take into consideration the source of illumination used Much the best contrast is got by using the rubin S combination stain with daylight as the source of illumination Failing this, white artificial light, and failing this, a deep blue screen must be inserted below the diaphragm in the case of the eosin and the ink combination stains respectively, in order to cut off the yellow rays

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[1] THE LANCET 1916 ii , 1100

With ordinary strong daylight the rubin S combination gives a rose-red tint to the background, while with either of the other combinations the background is a sort of salmon pink. From all the cysts stand out a brilliant greenish yellow, although the contrast is not so marked the yellower the background becomes The best contrast effect can, however soon be determined after a little manipulation by each individual worker for himself, who must bear in mind the points mentioned above regarding depth of film, and so on

I wish in conclusion to express my thanks to Mr R C M Lean M A B Sc of University College, Reading, for much valuable help in connexion with the above

Summary

The stain combinations here recommended are devised for the purpose of detecting protozoal cysts in general and more particularly those of *E coli* and *E histolytica* but they are not intended as a means of discriminating between *coli* and *histolytica* cysts respectively although there are some indications that this mode of staining may aid in the differentiation To get the best results attention must be paid to the various points mentioned The advantages claimed for the above technique are these —

1. One or other of the stain combinations can easily be obtained and rapidly made up
2 The detection of cysts and their identification are carried out in one and the same preparation
3 The contrast in colour is so striking that the cysts cannot be mistaken for anything else and the veriest tyro cannot fail to detect them if present The possibility of missing a carrier is reduced to a minimum
4 Without using too thick a preparation it is nevertheless possible to use slightly more fæces at one examination than by the simple iodine method The cysts can be picked out quite easily even in a thick clump of débris, and this is not always possible in a simple iodine preparation
5 Where doubt exists as to whether a particular cyst is to be classified as *coli* or *histolytica* accurate measurement—formerly considered a point of crucial importance but no longer to be relied on—is facilitated since the effect of halation is practically eliminated
6 The method above described reduces considerably the time spent on such examinations a point of some importance where many specimens have to be examined in a day A positive film even in the hands of the less experienced can be recognised at once while a negative film may be labelled so with certainty inside two minutes
7 Where the observer is hunting specially for the smaller cysts such as those of *Tetramitus mesnili* the Stephens s ink combination may be found preferable although it does not give such a definite colour contrast with the larger cysts In all cases the film made should be the thinnest possible and the source of illumination should be taken into account [1]

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[1] Since writing the above the Director of the Wellcome Research Bureau has kindly given me a reference to a wet-stain method described by [illegible] in a paper "Sur la Dysenterie Amibienne" published at Saigon in 1913 In this paper the stain used was a single one either eosin methylene blue or iodine by itself Eosin alone as recommended in this paper is poor and not even as good as iodine alone [illegible]

ROYAL VICTORIA HOSPITAL BELFAST —At the annual meeting held on March 29th it was reported that during 1916 there had been 3457 intern and 25 413 extern patients and a daily average of 518 patients in the hospital and that over [illegible] operations had been performed Though the annual subscriptions have increased it is estimated that an additional sum of £[illegible] will be required during the current year owing to the continued rise in the cost of materials Five members of the medical staff are at present at the front A bequest of £10 000 from the estate of the late Miss [illegible] was announced

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TOXIC SYMPTOMS AFTER THE USE OF BISMUTH PASTE

BY F A. HEPWORTH, F R.C S ENG,

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IN view of the increased use of bismuth paste and its great value in the treatment of infected wounds, I venture to publish the result of an investigation into a number of cases suspected of poisoning which have occurred in the surgical wards of the Wharncliffe War Hospital, Sheffield

Five men have been found to show symptoms suggesting plumbism and although under the care of different surgeons and in different wards they are alike in suffering from severe septic wounds and in the fact that all were treated by the application of bismuth and iodoform paste (B I P P) according to Professor Rutherford Morison s technique This paste has been in use here from September, 1916 and is still being used The method was very kindly demonstrated to me by Professor Morison in November and has been proved to be very beneficial

Up to Nov 3rd the paste was prepared from bismuth carbonate which was afterwards tested and no lead contamination discovered After Nov 3rd a new lot of bismuth subnitrate was used, as in Professor Morison s formula, this stock lasted for about four weeks, and it was among the cases treated during this period that those suspected of poisoning occurred. Unfortunately, the subnitrate was used up before the symptoms had been noticed, and the drug was therefore not analysed. Since the beginning of December, both bismuth carbonate and subnitrate have been used and both have been examined and declared lead free by Staff Sergeant F C Thompson, D Sc, R A M C The method of testing is added to this report as a separate note The drugs have all been obtained from the base medical stores at York

In this report seven cases are included all of which were treated by the Morison method, they represent all the most severely wounded and most septic cases treated with the bismuth paste at that time Many slighter cases were similarly treated but none showed poisoning Of the seven cases, five had symptoms of poisoning, and two were free

In the accompanying table, which gives details of the cases, it will be seen that four patients developed a *blue line on the gums* This was first noticed in Private Y, who complained of a sore mouth 10 to 14 days after his operation and was found to have a broad band of bluish pigmentation inside the cheeks, and on the sides of the tongue as well as an unusually thick line on the gums Other patients were then examined and three more were found with less noticeable but still distinct "blue lines"—Sergeant R, Private B and Private D

Anæmia was present in all seven cases, and disappeared as the wounds healed *Constipation* was especially noticeable in Private Y Both symptoms are so common among men with severe wounds that they are of little diagnostic value No neuritis wrist drop, colic or headache has been noticed *Mental stupor* was a troublesome feature in one patient (Private D) but had been developing before his treatment with bismuth paste

Loss of sphincter control delirium, and sleeplessness continued for two or three weeks in the case of Private J B who was extremely ill and thought to be dying His infection was severe and his knee joint was involved. Improvement followed, not directly after amputation, but as the suppurating amputation wound cleaned up His symptoms, therefore may have been due to plumbism, but are much more likely to have been caused by septic intoxication or iodoform poisoning

Blood changes were looked for by our pathologist, Major A E Naish R.A M C (T) but no granules were found in the corpuscles The *urine* was also examined for lead, but no trace found in any case

Opinion was at first strongly in favour of the view that the symptoms in these patients were due to lead absorption especially as the cases occurred while one particular batch of bismuth preparation was in use But in Sir Thomas Oliver s book on "Lead Poisoning" p 135 it is stated that—

> A blue line on the gums with difficulty distinguished from that caused by lead may be observed in persons to whom large doses of bismuth have been administered by the mouth or who, as the subjects of empyema have had injected into the fistulous track in their thoracic wall bismuth emulsion

DETAILS OF CASES, INCLUDING THOSE WITH TOXIC SYMPTOMS AFTER USE OF BISMUTH PASTE

—	Disease	Date of wound	Severity and character of wounds	Date of operation and application of B I P P	Date of symptoms	Severity and character of symptoms.
Pte Y	G.S W both legs Double amputation in France	July 7, 1916	Large granulating flap wounds at level of knees	Double re-amputation. Dec. 5 1916	Dec 16 onwards	On Dec. 16 1916, complained of sore mouth; had broad blue line on gums and cheeks Dec. 22. Constipation no colic anæmia. Wounds healed by Dec. 30.
Pte. D	G S W left thigh G.S W left foot. Comp fracts of femur and tarsal bones	Aug 6 1916.	Both wounds severe. Much suppuration. Fractured femur in bad position	Nov 17 1916	Dec 20	Blue line on gums Dec. 20th. Mental stupor on Dec. 1st, but had been difficult to manage and stuporose to less extent during early part of November Anæmic all the time Wounds healed by Jan 7th, 1917
Pte M	G.S W left shoulder Fract of greater tuberosity of humerus Joint involved	Oct. 25 1916	Wound pouring with pus Temperature 103° every evening	Nov 12, 1916.	—	No toxic symptoms Steady improvement
Pte B	G S W right thigh Comp fract. femur G.S W left wrist.	Nov 10, 1916	Septic wounds Femur comminuted	Nov 27 1916.	About Dec 20	Well marked blue line on gums Anæmic (but was so before operation)
Sgt. R	G S W right shoulder Fract. of greater tuberosity of humerus Joint infected	Nov 13, 1916	Deep wound tracking behind joint, and under scapula. Septic	Nov 27, 1916.	About Dec 20	Pyorrhœa alveolaris, with thin blue line on gums Transient anæmia.
Pte J B	(a) G S W left buttock. (b) G S.W left thigh Comp fract. femur Knee-joint infected	Nov 16 1916	Infected but well treated by Carrel method. Bone projecting into supra-patellar pouch of knee	(1) Nov 27 (2) Dec 14	Dec. 4th and later	No blue line on gums Delirium sleeplessness high temperature loss of control over sphincters All these symptoms were considered to be due to septic infection
Pte H	G.S W right thigh Comp fract of femur	Sept.15, 1916	Track through thigh from side to side. Septic Bone comminuted.	Oct 27 1916.	Nil	No toxic symptoms Progress in this case was much better after the use of the bismuth paste. He had shown practically no improvement previously

And in our cases, with the exception of the "blue line," no typical symptom of plumbism has been present, although with so intense a blue line as occurred in the patient, Private Y, other symptoms might reasonably be expected to occur In view of the importance of a correct diagnosis it is very unfortunate that none of the bismuth preparation used in treating these particular cases was obtained for chemical examination

I desire to acknowledge the help of Major Naish, Mr M H Phillips, and Dr J C Maddison in the investigation and treatment of the cases referred to

Method used for detecting a trace of lead in bismuth carbonate or subnitrate, by Staff Sergeant F C THOMPSON, D Sc, R A.M C—The usual tests for lead are useless When dissolved in nitric acid, lead can be precipitated as PbO_2 on the anode of an electrolytic cell, while bismuth goes to the kathode The following method, which is simple, very delicate, and requires no special apparatus or skill, has been worked out for the purpose

Dissolve 5 grammes of the bismuth compound in 10 c.c [of concentrated hydrochloric acid. Dilute until bismuth oxychloride is just precipitated, and re-dissolve in a few drops of HCl Filter if necessary through a *dry* funnel into a dry beaker Add 3 c c concentrated sulphuric acid, cool and add an equal bulk of alcohol, and put aside. 0·07 per cent Pb gives a milkiness in about five minutes 0·02 to 0·03 per cent Pb gives a faint milkiness in about four hours

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THE

RELATION OF STRUCTURE TO FUNCTION AS SEEN IN A MECHANISM OF THE VENOUS SYSTEM

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IT is difficult to imagine that the arrangement of the venous system, to which attention is directed in this note, can have escaped the observation of anatomists and physiologists from the time of Harvey onwards When once the cardinal facts of the circulation of the blood had been demonstrated it is beyond belief that any mechanical aid towards the efficiency of the circulation should have escaped notice But recorded observations upon this particular detail have not so far been encountered in the literature, and it is to be remembered that a just conception of the mechanism of venous return came relatively late in the story of unravelling the mysteries of the circulation

That John Hunter had no note upon it, in such of his manuscripts as are lost to us is difficult to believe But had the observation ever received common currency it is unlikely it would have escaped the attention of the Rev William Paley, nor could it have failed to furnish material for a Bridgwater treatise However, this particular phase of anatomical literature does not dwell upon the detail to which attention is here directed, and this silence is shared by modern text-books on anatomy and physiology It is this fact which alone justifies publication to-day That a search of the literature has not revealed an exposition of a simple mechanical contrivance in the animal body is my excuse for publication, but I would apologise in advance to such eighteenth century philosophers as may have appreciated and recorded the conditions in works which I have, so far, overlooked

The primary tubular elements of the vascular system are primitively pulsatile, and this pulsatile power is manifested at an extraordinarily early period Not only is the first formed heart-tube capable of contraction and dilatation, but every mesoblastic muscular cell of the primary tube is endowed with an inherent power of rhythmic movement By this power, aided by a secondary valve system, the blood is urged onwards to distal parts of the body But when the blood, so urged, has come to the end of the outgoing arterial system and enters upon its meandrine pilgrimage of the tissue spaces it loses, little by little, this propulsive *vis a tergo* Yet from its tissue wanderings the blood still has to find its way along the veins upon its return journey to the heart.

It is obvious that, under normal circumstances, this journey has to be undertaken in the absence of any effective pulsatile propulsion from the heart. Many mechanical aids may come to the assistance of the returning venous stream. In the first place, since pulsation is so inherent a property of embryonic vascular channels, it might be expected that pulsatile veins should not be unknown, and as a matter of fact, their existence has long been demonstrated, and the occurrence is highly instructive In 1851 Professor T Wharton Jones[1] first noticed pulsation in the veins coursing in the membrane of a bat's wing On the average the veins contracted 10 times every minute, and these contractions aided by a system of valves, were seen under the microscope to propel the blood onwards towards the heart Such a striking phenomenon at once arrested his attention, and formed the subject of a series of communications to the Royal Society The circumstance also demanded an explanation, and Wharton Jones suggested that such an arrangement was necessary in the bat's wings, since they 'on account of their extent are, as regards their circulation, in a considerable degree, though not entirely, beyond the sphere of the heart's influence" This explanation may be partly satisfactory, but it cannot wholly account for the phenomenon Many structures as far removed from the sphere of the heart's influence could be cited, and pulsatile venous channels in these structures would be sought in vain The peculiarity of the veins of the bat's wing membrane lies in the fact that they course in an outlying part of the body which is totally unprovided with muscles capable of exerting pressure upon them In the absence of skeletal muscle masses in this very specialised manus the pressure which urges the blood onwards must be furnished by the muscle of the veins themselves, and the primitive pulsatile possibilities of vascular channels is called into being

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[1] Discovery that the Veins of the Bat's Wing (which are furnished with Valves) are Endowed with Rhythmical Contractility and that the Onward Flow of Blood is Accelerated by Each Contraction Phil Trans. Feb 5th, 1852.

That the pressure exerted by surrounding skeletal muscular masses is the chief agent in propelling venous blood along the veins is not to be doubted, and this fact is recognised by every physiologist It is the purpose of this note to point out that in this method of producing venous return structure is related to function in a very striking manner

We may make a generalisation which amounts to the statement of a definite law of animal economy, that (1) *venous channels which run their course in the midst of muscle masses are multiple*, and that (2) *when emerging into intermuscular spaces these plexiform vessels unite to form single channels again* This might be translated into the terms of anatomical nomenclature by saying that arteries are accompanied by single veins in intermuscular spaces, but are accompanied by irregular and multiple venæ comites when passing in intramuscular planes

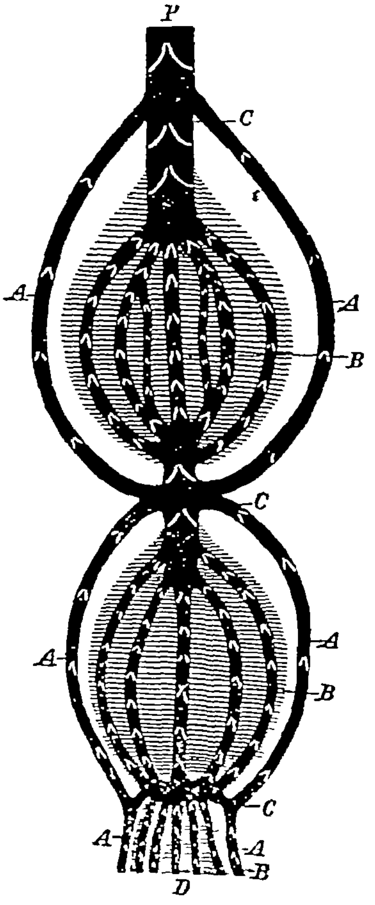
This is a very simple arrangement, but it has led to many complications in anatomical nomenclature Anatomists rather despise venæ comites, since they are irregular and variable channels, and in many cases these venæ comites are but ill described and often they are not named harmoniously with the terminology employed for the accompanying artery The anatomical purist prefers a discrete and constant channel to which to assign a definite name Instances could be multiplied to weariness, but it will be enough to point to the radial and ulnar veins which have no precise anatomical relation to the like-named arteries, which are themselves accompanied by venæ comites The radial and ulnar veins are, properly, the complex venous channels which accompany the radial and ulnar arteries in their course among the muscles of the forearm This question of nomenclature will not be proceeded with further, the purely functional meaning of the arrangement will alone be dealt with

It is obvious that if blood is to be squeezed back to the heart by the pressure of muscular masses the most efficient mechanical disposition will be achieved by a large series of venous channels containing a large amount of venous blood becoming subjected to pressure whilst lying in the midst of contracting muscle masses We may say that in the interstices of muscle groups there is a valved venous sponge which is squeezed by the muscles when they undergo contraction But muscle groups have a definite disposition and spaces exist between the groups—notably at the flexor surfaces of the joints in the limbs—and in these spaces no pressure is exerted In these spaces the meshwork of venous channels gathers itself together again and forms a single tube and this tube is invariably equipped with well developed valves The sponge is emptied by muscle pressure into this tube and the return of the blood is made impossible by the presence of the valves In a simple mechanical way the intramuscular venæ comites may be likened to the bulb of a syringe which is compressed by the muscles, the single valved channel to the valved nozzle of the syringe

Now it is to be noted that this arrangement may be several times repeated upon the course of an individual venous channel the repetition occurring as often as the conditions of subjection to muscular pressure and freedom from this pressure may recur In the limbs for instance there is an intramuscular pressure sponge or syringe bulb in each segment represented by the complex deeply seated venæ comites of the named arteries In the flexor intermuscular space over each joint is a single valved channel or syringe nozzle The blood is therefore squeezed from stage to stage by the pressure of a series of reservoirs connected up in line as one might imagine a linked series of Higginson syringes

It is at once apparent that such is a highly efficient mechanism when limbs or parts are moved in orderly and leisured fashion segment by segment But if the whole limb or part be thrown into a state of contraction or if the contraction of the several segments follow one another with great rapidity the several groups of deep intramuscular veins may be compressed simultaneously or in very rapid succession Such a state of affairs would lead to a blockage of the venous return from the part In order to meet this demand a second system of superficial veins, which are not subjected to muscle pressure, is called into play We may make a second generalisation and state that—*at all those points at which the deep intramuscular veins become freed from pressure and appear as single, valved tubes there are connecting, valveless branches between the deep and superficial veins, and at each of these points an alternative course is offered to the blood*

When the muscles of the next segment nearer the heart are relaxed the blood will return by the deep intramuscular veins, gaining an added impulse by the next contraction of the muscles, but when these muscles are contracted it can pass by the superficial veins to the next discrete channel beyond the contracted-muscle mass It is not necessary to press this matter further, since its simplicity is self evident and a diagram is added to render the details more obvious. One or two simple outcomes of this arrangement are, however, worthy of notice



Purely diagrammatic representation of the venous circulation of a limb *A* Superficial (subcutaneous) veins *B* Veins (in shaded areas) which run in the midst of muscle masses. *C* Single channels in the interspaces between the muscle masses of different segments. *D* Distal extremity *P* Proximal extremity

When the muscular system is entirely relaxed, as in sleep the heart will propel blood to its distal arterial ramifications, but the absence of muscular contractions will impede its return to the heart, venous blood will, therefore, tend to accumulate in the relaxed distal parts In this way a large proportion of the blood of the body may become lodged in the venous system. Upon waking this blood must be returned to the heart to ensure the proper arterial supply to the brain and other organs It is for this reason that muscular contractions of the limbs—the familiar stretching — accompany the waking of such animals as sleep lying down in a state of muscular relaxation Yawning, by causing a suction in the thorax and a compression of the abdomen attains the same ends The blood is squeezed home from outlying parts into the cavities of the body, and finally to the heart It is noteworthy that animals which do not lie down to sleep or do not thoroughly relax their muscles in sleep do not stretch or yawn when waking

One other effect is of peculiarly human interest If the legs are dependent but are not engaged in any special muscular activity, venous blood will tend to gravitate into the veins The deep intramuscular veins are supported by the muscles and cannot overfill and there will therefore be a tendency for the superficial veins to become distended with blood This is the etiology of varicose veins in sedentary persons On the other hand if the intramuscular veins are vigorously and continuously compressed by muscular action the burden of returning the venous blood will again be thrown upon the superficial veins This is the etiology of varicose veins in athletes

A NOTE ON THE

IMMEDIATE AFTER-TREATMENT OF THE GUILLOTINE AMPUTATION STUMP,

AND THE PREVENTION OF SECONDARY HÆMORRHAGE

By H F WOOLFENDEN, F R C S Eng
CAPTAIN R A M C (T C),
AND
J CAMPBELL, M D Liverp ,
CAPTAIN R A M C (S R)

The guillotine amputation stump usually arrives in the base hospital with a not inconsiderable amount of retraction of the skin, more especially after it has been treated for several days without any effort being made to prevent the retraction Any extension applied to the skin in order to be really effective should commence immediately after operation, be continuous, and result in a more or less complete covering in of the stump These ends seem to be most satisfactorily attained by the following method, which we have used for a long time in such cases in the hospital with which we are connected

On the completion of the amputation each of the quadrants of skin is perforated with the knife by a pair of stab incisions about 1 inch apart and 1½ inches from the edge, and a loop of sterilised tape 10 inches long is passed through each pair of perforations (as shown in the diagram) so that the tension is borne by the surface of the skin when the loop is pulled on The loops of tape are gently pulled down by the assistant and the stump is dressed and firmly bandaged After this the stump is placed in an ordinary Thomas knee or arm splint and supported in the usual fashion The loops of tape are then attached to the end of the splint by fairly stout rubber tubing tightened to the required degree and altered from time to time Any subsequent dressing can readily and easily be accomplished without slackening the extension by merely removing the dressing from between the loops of tape On the second to the fourth day the tapes are removed and the extension is kept up by strips of crinoline bandage To the edge of one end of each strip are attached a pair of ordinary metal hooks These pieces of bandage are glued to the skin by collodion with the hooks placed about 1 or 2 inches from the skin edge A loop of tape is then passed round the hooks and rubber applied as before The hooks and collodion are best changed every two or three days It is most important that the skin should never be allowed to retract when changing the soiled hooks , this can be prevented by an assistant keeping the skin drawn down The object of the elastic extension is to maintain a continuous pull on the skin as it stretches under the extension

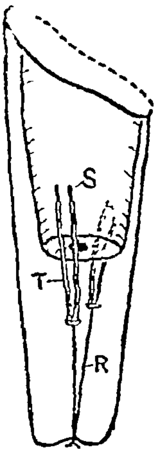


Diagram to show method of applying skin extension to the guillotine amputation stump S skin incisions T tapes R rubber tubing

By the above means every guillotine amputation can be easily transported, nearly every stump almost completely covered in when discharged to England (more especially if short flaps of ¾ inch to 1 inch have been made at the time of the operation), the stay of the patient in hospital considerably diminished, and the necessity of subsequently shortening the stump obviated, or at any rate the amount of bone requiring removal much lessened In addition the stump is considerably steadied, with consequent greater comfort to the patient

It is our invariable practice to *raise the head* of the bed so that the amputation stump looks slightly downwards By this means tracking of sepsis along the fascial planes, so frequently seen when the stump is raised becomes of quite rare occurrence The pain of subsequent dressings is largely obviated by spreading out a single layer of gauze over the raw surface of the stump and then packing the dressings on its surface or by the use of gauze soaked in glycerine

The writing of this note has been suggested during the last few weeks by the arrival in hospital of quite a large number of guillotine amputations in which no effort at all has been made to prevent skin retraction No originality is claimed, as extension in some form to the flaps has been used in France for some time , but this method has the advantage that the extension can be maintained during transit by train or boat

Secondary Hæmorrhage from the Main Artery in Amputation Stumps

During the treatment of very many amputations which have been done in casualty clearing stations and in this hospital there is one slight modification of the orthodox method that has suggested itself to us The cut artery in many instances is found to have retracted about ½ inch above the level of the cut muscles The pocket so left becomes the seat of suppuration and the source of infection, which extends some distance upwards along the outside of the artery This localised suppuration persists for some time after the rest of the stump has become healthy and is a very common cause of secondary hæmorrhage from the main artery Moreover, when such hæmorrhage occurs the difficulty of re ligaturing the artery is increased on account of its retraction

What happens is, we think, the following The fleshy part of the limb is cut through by one sweep of the knife Owing to its elasticity the artery retracts It is then seized by the forceps pulled down, the tissues round it cleared, and the artery tied and let go It retracts a little further and the opened up fascial plane becomes the seat of suppuration round the end of the artery To obviate this we have made a practice of exposing the artery about 1½ inches below the level at which we intend to divide the muscles We then divide and tie the artery and vein at this level, so that when the amputation is completed the vessels are projecting out from the stump By this means the incidence of secondary hæmorrhage from the main vessels has, we think been very much lowered, and in the few cases in which it has occurred it has been very much more easily dealt with, as the end of the artery can be readily re ligatured without the necessity of further incision

The occurrence of secondary hæmorrhage in wounds generally —Another very fertile source of secondary hæmorrhage is the leaving of a stiff rubber tube in contact with a large arterial trunk after the operation of draining a wound with the almost certain result that ulceration of the vessel occurs, followed by fatal hæmorrhage in many cases It would at first sight seem unnecessary to point this out, but we can recollect very many patients coming down from the casualty clearing stations with large rubber tubes pressing against their femoral or brachial arteries These have always been immediately removed but only too frequently the damage has already been done, and within a few days dangerous and often fatal hæmorrhage takes place from the eroded artery

Medical Societies.

MEDICAL SOCIETY OF LONDON

Traumatic and Arterio-venous Aneurysms

A MEETING of this society was held on April 2nd Lieutenant-Colonel D Arcy Power the President, being in the chair

Colonel Charters J Symonds who opened the discussion, said that whilst many cases of arterio-venous aneurysm had been submitted to operation since the war began, others had remained untreated , it would be very valuable to see both groups and so modify the views currently held His experiences had led him to correct some of his former views The most interesting form of aneurysm was that in which there was a communication between an artery and a vein either direct or by the intervention of a sac In some the communication was set up within a few hours of the trauma , in others there was considerable delay He asked for experiences as to the secondary effects of aneurysm, such as were alluded to by Sir George Makins and by Dr Bernheim of America especially cardiac and circulatory disabilities The local condition in some varix aneurysms was important , in those involving the common femoral artery and the profunda femoris there was enormous dilatation of veins, so that they looked like sinuses running through the muscles The difficulty in arresting hæmorrhage in these was very great After giving particulars of a number of these he proceeded to discuss the treatment In aneurysm of the posterior tibial artery the disability was very slight, this was also true for those at the bend of the elbow When an aneurysm existed at the base of the skull, so that the patient was kept awake at night and had nerve disturbance in consequence, it was advisable to operate Sir George Makins's view was that aneurysmal varices seldom required operation He described by means of diagrams the various operative procedures which had been devised for 'aneurysm and the degree of success which had attended them in his own experience Gangrene was a serious danger in operations on the common femoral, in the South African War it occurred in 50 per cent according to Makins In aneurysms below the middle of Hunter s canal his experience was that gangrene did not follow ligature of the vessels With regard to arterio-venous aneurysms Sir George Makins was strongly of opinion that these should be left for from two to three months to consolidate and contract and to permit the establishment of a collateral circulation But the speaker suggested that it might be wiser to operate on them early, in the same way as upon a wounded artery, thus avoiding the trouble due to adhesions which followed passive waiting Procedures which might be useful were temporary ligature of a large artery through the abdomen or compression of the common iliac artery by a band of deep fascia being sewn over it or using a portion of saphena vein sufficient to encourage early collateral circulation In aneurysm of the carotid there was danger of the supervention of hemiplegia, one or two examples of which he related He thought that much could be said in favour of operating earlier than Sir George Makins advocated. The formation of adhesions and the development of a large number of thin walled vessels, which were particularly hampering if the operation indicated was suture of the aperture in the artery, had to be taken into account

Major R H JOCELYN SWAN spoke of the need for distinguishing between arterial hæmatoma and arterio venous aneurysm By the former was meant a collection of fluid blood and clot contained under pressure in the muscular and fascial planes of the limb into which blood is forced from a laceration in the wall or complete severance of an artery or a large branch of it The clot might become softened by direct infection from the external wound, when secondary hæmorrhage might occur or, as was more common, the surface wound healed, whilst the impact of the circulating blood hollowed out a cavity in the recent clot which by organising formed a more or less thick walled laminated sac with smooth inner lining, resulting in a pulsating swelling and forming the false or traumatic aneurysm At the same time as the result of infiltration of the tissues by serum and leucocytes, a good deal of matting and fixation of the sac occurred and the anatomical lines were obscured conditions which caused difficulty when an attempt was made to remove the sac at an operation and might render the main vessel hard to find at some distance from the aneurysm An arterio venous aneurysm implied a wound both of the artery and vein, with a communication between them This might be direct—aneurysmal varix This simple form was uncommon, it was more common to find an aneurysmal sac at the distal side of the artery in addition or a sac lying between or on a side of both artery and vein with which both communicated In some cases the sac seemed to be formed mainly from the venous injury An arterio venous aneurysm might not be noticed for some weeks or months after the injury Of the recently published cases of aneurysm following gunshot injuries, of 146 which were operated upon, 106 were false aneurysms and 40 of the arterio-venous variety In his own 23 cases 16 were false and 7 arterio venous With regard to situation 40 occurred in the upper extremity and 90 in the lower 12 of the remainder being in the carotids The proportion of arterio-venous to false aneurysms was greater in the larger vessels, in the femoral it was 14 to 31 in the popliteal 8 to 21 in the posterior tibial 2 to 13, whilst in the axillary it was 3 to 9 and in the brachial 2 to 14 In the neck there were 8 arterio-venous aneurysms to 4 traumatic The physical signs of arterio-venous aneurysm differed from those of false aneurysm The bruit which might be systolic at first, became a more continuous rumble, and was conducted more widely both along vessels and bones The thrill was coarser and bubbling and often appreciated by the patient The swelling of a varicose aneurysm was usually smaller and less defined than that of a false aneurysm Dealing with treatment, he advised delaying operative procedure for some weeks unless untoward symptoms, such as gangrene, rapid increase in the size of the swelling, or increasing pain from pressure upon nerves, should force one's hands In most cases of arterial hæmatoma he advised complete rest in the hope that the whole might consolidate, whereas if a traumatic aneurysm developed it could be dealt with subsequently If an arterial hæmatoma were opened it might be very difficult to pick up the injured vessel, whereas a proximal ligature of the main trunk at the seat of election was to be avoided, for not only had the collateral circulation been given little chance of establishing itself, but also it might be seriously interfered with by the pressure of the mass of blood clot in the tissues Further, the hæmorrhage might proceed from a large branch and not from the main trunk, while ligature of the main vessel might determine the onset of gangrene in the limb When a false aneurysm was present the patient should be kept at rest with slight pressure on the swelling and the latter carefully watched for any increase in size Although operative treatment would generally be necessary, it should be deferred, if possible, until all wounds were firmly healed and collateral circulation had had a good chance of becoming established The difficulties were lessened rather than increased by waiting If the swelling had not appreciably diminished in 6 to 8 weeks, if signs of increase were present, or if pain from nerve pressure became marked, operation should be undertaken In most of his operations he had been obliged to abandon an attempt at suture and to rely upon obliteration of the vessel by ligature The operation should aim at reconstructing the lumen of the injured vessel by suture, when this was not feasible, ligature immediately above and below the injury should be carried out and the sac emptied and obliterated by suture It was neither advisable nor necessary to attempt removal of a large sac By opening the sac one made certain that no branch led into it which would keep up the aneurysm In arterio-venous aneurysm operation would seldom be required for direct fistula When the artery and vein were in communication through a sac operation was needed, owing to the gradual increase in size of the swelling He believed that ligature of both the artery and the vein, above and below the aneurysm, would be found to be the best that could be done where immediate suture was impracticable

Major W MCADAM ECCLES remarked that Colonel Symonds thought it would be well not to wait before operating on arterio venous aneurysm and ordinary traumatic aneurysm, whilst Major Jocelyn Swan thought it wise to wait He believed that both were right In the case of aneurysm in the neck he considered that the sooner one operated the better, but when the situation was one of the limbs it was right to wait for collateral circulation to be established So far he had not had a case of gangrene of the lower limbs, because he had waited for months in these cases

Captain J R. LEE of the Australian Forces, expressed his firm belief in combining the operative treatment with the administration of a vaccine to counteract the lighting up subsequently of pathogenic organisms Where it was possible, preference should be given to an autogenous vaccine He agreed as to the wisdom of waiting in cases of aneurysm of the limbs He did not agree with leaving the sac as there was evidence that it was apt to become canalised

Captain C ROWNTREE considered that aneurysmal varix with a direct arterio-venous fistula was on the whole better left alone, especially as it caused but little trouble It was a different case with the indirect variety Suture was very rarely possible though it should be aimed at It would be useful to learn the proportion of cases of successful suture One could not always be certain whether a condition was aneurysmal varix or varicose aneurysm and in some cases it was essential to incise and explore before deciding whether it should be left alone or operated upon

Dr MILLER thought, as the result of watching many cases that when an aneurysm was near nerve trunks, if the surgeon was willing to operate, he should do so at once With regard to tying the common carotid he believed that hemiplegia occurred only when embolic material found its way into the brain

Colonel SYMONDS and Major SWAN replied

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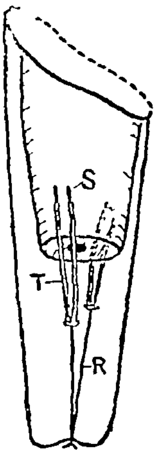

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This simple form was uncommon, it was more common to find an aneurysmal sac at the distal side of the artery in addition or a sac lying between or on a side of both artery and vein with which both communicated In some cases the sac seemed to be formed mainly from the venous injury An arterio-venous aneurysm might not be noticed for some weeks or months after the injury Of the recently published cases of aneurysm following gunshot injuries of 146 which were operated upon 106 were false aneurysms and 40 of the arterio-venous variety In his own 23 cases 16 were false and 7 arterio-venous With regard to situation, 40 occurred in the upper extremity and 90 in the lower 12 of the remainder being in the carotids The proportion of arterio-venous to false aneurysms was greater in the larger vessels, in the femoral it was 14 to 31, in the popliteal 6 to 21 in the posterior tibial 2 to 13, whilst in the axillary it was 3 to 9 and in the brachial 2 to 14 In the neck there were 8 arterio-venous aneurysms to 4 traumatic. The physical signs of arterio-venous aneurysm differed from those of false aneurysm The bruit, which might be systolic at first became a more continuous rumble and was conducted more widely both along vessels and bones The thrill was coarser and bubbling and often appreciated by the patient. The swelling of a varicose aneurysm was usually smaller and less defined than that of a false aneurysm Dealing with treatment, he advised delaying operative procedure for some weeks unless untoward symptoms such as gangrene, rapid increase in the size of the swelling, or increasing pain from pressure upon nerves, should force one's hands In most cases of arterial hæmatoma he advised complete rest in the hope that the whole might consolidate, whereas if a traumatic aneurysm developed it could be dealt with subsequently If an arterial hæmatoma were opened it might be very difficult to pick up the injured vessel, whereas a proximal ligature of the main trunk at the seat of election was to be avoided, for not only had the collateral circulation been given little chance of establishing itself, but also it might be seriously interfered with by the pressure of the mass of blood clot in the tissues Further, the hæmorrhage might proceed from a large branch and not from the main trunk, while ligature of the main vessel might determine the onset of gangrene in the limb When a false aneurysm was present the patient should be kept at rest with slight pressure on the swelling and the latter carefully watched for any increase in size Although operative treatment would generally be necessary, it should be deferred, if possible until all wounds were firmly healed and collateral circulation had had a good chance of becoming established The difficulties were lessened rather than increased by waiting If the swelling had not appreciably diminished in 6 to 8 weeks, if signs of increase were present, or if pain from nerve pressure became marked, operation should be undertaken. In most of his operations he had been obliged to abandon an attempt at suture and to rely upon obliteration of the vessel by ligature The operation should aim at reconstructing the lumen of the injured vessel by suture, when this was not feasible ligature immediately above and below the injury should be carried out and the sac emptied and obliterated by suture. It was neither advisable nor necessary to attempt removal of a large sac. By opening the sac one made certain that no branch led into it which would keep up the aneurysm In arterio-venous aneurysm operation would seldom be required for direct fistula When the artery and vein were in communication through a sac, operation was needed, owing to the gradual increase in size of the swelling He believed that ligature of both the artery and the vein, above and below the aneurysm would be found to be the best that could be done where immediate suture was impracticable

Major W MCADAM ECCLES remarked that Colonel Symonds thought it would be well not to wait before operating on arterio-venous aneurysm and ordinary traumatic aneurysm, whilst Major Jocelyn Swan thought it wise to wait He believed that both were right In the case of aneurysm in the neck he considered that the sooner one operated the better, but when the situation was one of the limbs it was right to wait for collateral circulation to be established So far he had not had a case of gangrene of the lower limbs, because he had waited for months in these cases

Captain J R LEE, of the Australian Forces, expressed his firm belief in combining the operative treatment with the administration of a vaccine to counteract the lighting up subsequently of pathogenic organisms Where it was possible preference should be given to an autogenous vaccine He agreed as to the wisdom of waiting in cases of aneurysm of the limbs. He did not agree with leaving the sac as there was evidence that it was apt to become canalised

Captain C ROWNTREE considered that aneurysmal varix with a direct arterio-venous fistula was on the whole better left alone especially as it caused but little trouble It was a different case with the indirect variety Suture was very rarely possible, though it should be aimed at. It would be useful to learn the proportion of cases of successful suture One could not always be certain whether a condition was aneurysmal varix or varicose aneurysm and in some cases it was essential to incise and explore before deciding whether it should be left alone or operated upon.

Dr MILLER thought as the result of watching many cases that when an aneurysm was near nerve trunks if the surgeon was willing to operate he should do so at once With regard to tying the common carotid he believed that hemiplegia occurred only when embolic material found its way into the brain

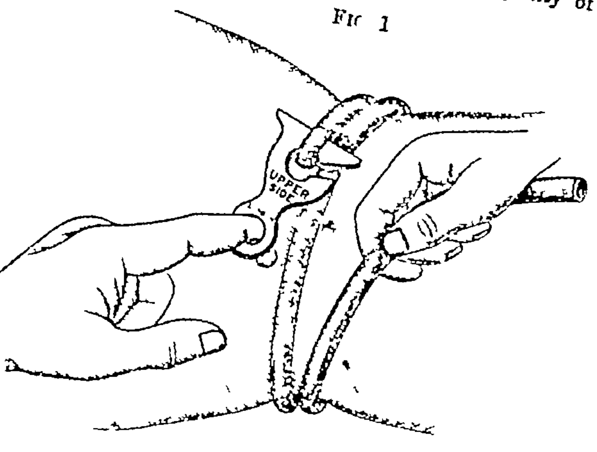
Colonel SYMONDS and Major SWAN replied.

New Inventions.

A NEW TOURNIQUET

THE question of tourniquets, both in war surgery and in operations on the extremities, has been rather prominent recently, and some correspondents to THE LANCET have advocated the use of pneumatic tourniquets It is obvious, however, that these are not suitable either for the arrest of severe hæmorrhage or the compression of a large artery such as the femoral, though they may be satisfactory for the compression of veins to facilitate the intravenous administration of drugs, such as salvarsan and its substitutes What is required in the design of a tourniquet is simplicity of application, strength, and security The fastening which is here depicted has all these merits It consists essentially of a shaped metal plate (see illustrations) with a wide base and two circular openings One of these is complete, whilst the other is split so that the rubber tubing which supplies the elastic compressing force can be slipped into it

FIG 1



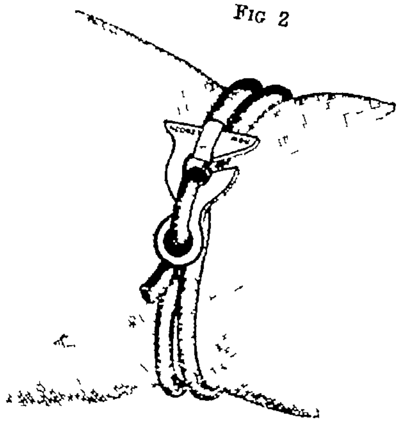
Method of application

The method of application is as follows —

The left forefinger should be hooked through the complete ring (Fig 1) and the plate held on the upper aspect of the limb, whilst the first turn of the tourniquet is passed round and under the limb and beneath the metal plate The base of this is then pressed down on the rubber so that it is held secure, while the right hand is again passed beneath the limb to apply the second turn of the tourniquet with sufficient pressure to obliterate the arterial circulation When the circular outline of the tubing becomes flattened by forcible stretching it can easily be slipped through the lateral slot in the proximal opening, the size of which is calculated to prevent the escape of the tube Any subsequent slipping of the tourniquet is then guarded against by threading the tubing through the complete ring (Fig 2) and pulling it tight. Two turns of the rubber tubing are sufficient for the lower extremity, and in the case of the arm the necessary compression can easily be obtained with a single turn It is, of course, necessary to protect the skin of the limb in the usual way with a fold of lint or other soft material

I have used this new tourniquet in a number of cases with complete satisfaction, and the necessary manœuvres to apply it take longer to describe than to carry out I have been agreeably surprised to find that an inexperienced dresser can apply it successfully when no instructions at all have been given to him

FIG 2



Applied

Three points should be especially noted —(1) The complete ring is for the forefinger of the left hand, where it should remain till the tourniquet is in position, (2) by pressing the widened base on to the first turn of the tube around the limb all loss of tension is avoided, and (3) the slot of the incomplete ring should be directed towards the right hand of the surgeon, and to ensure this one aspect of the metal plate bears the words "upper side"

I am much indebted to Messrs Down Brothers, St Thomas s street, London, S E, for the care with which they have carried out my design

JOSEPH E ADAMS, M S Lond, F R C S Eng,
Captain R A M C (T)
Devonshire-place W

A SPLINT FOR THE WRIST DROP OF RADIAL NERVE PARALYSIS

THIS splint, a description of which is supplied by Mr Bryden Glendining, F R C S, was originally extemporised by a member of the firm of Henry A Murton, Ltd, surgical instrument manufacturers, of Newcastle on Tyne, who was serving in the Army and was invalided from the front He became a patient in the Duchess of Bedford's Woburn Military Hospital, and designed the appliance to meet his own case The splint is made of aluminium, and consists of wrist portion (Fig 1), moulded and shaped to adapt itself to the volar surface of the wrist and lower ends of the radius and ulna, and attached by a webbing strap and buckle, and palmar portion (Fig 2), which is shaped and cut out for the hand, and at the same time is capable of extension whereby it can be lengthened or shortened according to the size of the hand, or according as it is desired to carry the support to the metacarpo-phalangeal joint only, or to the first inter phalangeal joint, a fly nut in the splint looking the sliding surfaces and fixing the apparatus at the required length Between the wrist and palmar sections the splint is hinged and fitted with two strong wire springs, which act in the direction of dorsal flexion, so that, unless counteracted by action on the part of the wrist and hand flexors, the position assumed is constantly that of hyperextension The support is not carried beyond the first inter phalangeal joint, since it is considered more beneficial for patients to exercise the fingers by means of the lumbrical muscles attached to the back of the extensor tendons over the first phalanges

FIG 1

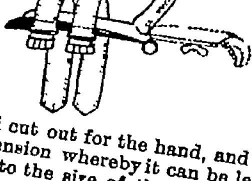
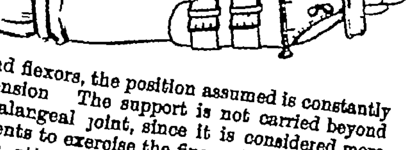


FIG 2.



The advantages claimed for this splint are its small bulk and lightness, and the increased pleasure which patients derive from being able to use the arm and hand during convalescence It has been generally adopted at the Woburn Military Hospital

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>
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THE LANCET.

LONDON SATURDAY, APRIL 14, 1917

The Health of the People

SOME 90 years ago the social and economic conditions in England, grievously affected by the Napoleonic wars, produced a feeling among many of the more far seeing, who were also blessed with a humanitarian sense, that the health of the people ought to be a national care. Even though that feeling took outward form mainly in designing methods whereby the ills of the poor, as far as they were the outcome of disease, should not spread to the population at large, there existed behind it a consciousness that eradication of those ills, rather than a lopping of their branches and a topping of their shoots, ought to be effected. In short, the need for making the health of the people the care of the State had become obvious to those who could read with a sympathetic heart the signs of the times, and from this position to that of to day, when by common accord we welcome the foundation of a State Department of National Health, seems but a short step—certainly one that should not have required 90 years of consideration. But to come to this conclusion is to forget that only a few people grasped the signification of the conditions in which a large proportion of the population were struggling, that the removal of those conditions was in most cases beset with the difficulties everlastingly associated with established custom and vested interests, and that the science of medicine had not acquired a familiarity with the etiology of disease that could enable its professors to preach the doctrine of prevention with sufficient authority either to arouse the public conscience or reinforce the voice of reform.

The Poor law Commissioners of 1834 perceived that ill health was a principal source of pauperism, and that the removal of the causes of ill health ought to be a more economical proceeding than the treatment of its consequences, and early public health legislation contained the germ of a National Health Department, but the nation—its units no more than its rulers—did not appreciate the splendour of the work which was beginning, resenting only the manifest drawbacks to legislation conceived, with however sensible an object, in the wrong spirit. None the less the work went on, for men were growing more liberal minded, and as medicine, leaping forward in bounds to accurate knowledge, became first an official aid and then an inspiriting counsel to further effort, sections of the community became alive to the fact that in various directions they could be relieved of masses of evil, to whose pressure they had hitherto resigned themselves. They learned that by sanitation there could be removed barriers to their health and happiness, which remained erect with no better apology than could be found in their antiquity, and, as each section was aroused, it made its claim for relief heard, with the result that the remedy best fitting the circumstances was applied. Schemes of reform initiated in this haphazard manner were entrusted for their carrying out to various departments of Government and various local authorities, with a consequent overlapping of jurisdictions and waste of energy and money, while the resulting confusion has been worse confounded by the creation of new Government bureaux and the rearrangement of local administrative machinery. The outcome has been to make the care of the health of the people, as conducted in this country, a magnificent and illogical muddle, in which fine ideas and accomplishments, many of which elicit the envy of modern civilisation, are blended with the opportunities for extravagance and dissipation of strength inevitably associated with the want of a central plan. All this has been for many years perfectly obvious to the medical profession, as well as to men and women whose public life has brought them into contact with the truths of our social existence. With them the feeling has been implicit that the health of the people, being a national asset, should have the national supervision of a State department. And now the whole nation, under the stress of war, sees eye to eye with them.

The Unionist Social Reform Committee has, therefore, put forward at a very apposite moment a well written pamphlet[1] on the subject of the health of the people, which unravels in clear terms the intricacies of the position. The writers, deliberately leaning to the economic side of their arguments for a thorough reorganisation of our care of the health of the people, demonstrate with figures the appalling loss in man power suffered by a nation which takes no heed to the health of its members. This loss they translate coldly into terms of money, mentioning sums that even in these times, while our ears learn of millions being spent daily in the conduct of the war, are so enormous as to challenge the attention of all. And, incidentally, it may be of considerable value to future progress that the popular mind should have been familiarised with the *necessity of* paying colossal sums to achieve worthy ends, poor we all shall be after the war, but we shall have learnt the lesson that great efforts are worthy of great sacrifices, and shall be ready to start a campaign against disease with the open handedness which has marked our military procedure, and, let us hope, with less grounds for the reproach of waste and disorder. A State Department of National Health is imminent, and, from the details so far made public, it seems safe to assume that in the new bureau full recognition will be accorded to the work and claims of private practice. Whatever prevention may do for the health of the people in bulk, the sick will have to be treated in detail, and it will be excellent that those practitioners who have to make good the places where the defences have broken down, or to confirm on their patients the outcome of scientific investigation, should possess the same central authority as those carrying out the work of prevention or research. In this way there will be a community of interests between the official and the private doctor from which the public will benefit.

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[1] The Health of the People: A New National Policy. A Report of the Unionist Social Reform Committee. London: Argus Printing Company, E.C. 4. 1917. Price 3*d*.

"Soldier's Heart"

THE articles which have recently appeared in our columns, as well as the letters published in this issue, bear witness to the interest taken in the subject of "disordered action of the heart" in soldiers. The Medical Research Committee has now published a report by Dr. THOMAS LEWIS of the investigations made by himself and his colleagues at the Mount Vernon Hospital, Hampstead, which the Committee has lent to the Army Council for the purpose. No name yet suggested for the condition is quite satisfactory. A considerable number of cases returned originally as valvular disease of the heart have been included in this report, as further examination showed that they did not present convincing evidence of organic disease, and therefore came within the scope of the inquiry. As the condition is not unknown among civilians, the term "soldier's heart" is not really applicable, and as there is no proof that it is primarily cardiac any such name as "disordered action of the heart" is neither accurate nor advisable. For the impression that he is suffering from disease of the heart retards the patient's recovery. Dr. LEWIS prefers the non-committal term of "effort syndrome," though this label probably will not gain general acceptation. He considers the leading symptoms, in order of importance, to be breathlessness, præcordial pain on exertion, exhaustion, giddiness, and fainting. He notes, as of less importance, palpitation, headache, lassitude, irritability of temper, insomnia, shakiness, and flushing. A disinclination to take alcohol in any form (sometimes for conscientious reasons, but as commonly for reasons of distaste) is to be reckoned a frequent and remarkable association. The characteristic signs on examination he classifies as follows: Increased heart rate, with an exaggerated response to emotion, exercise, and posture. The response of the systolic blood pressure is similarly exaggerated, and in patients who are up and about high readings are often obtained. A diffuse apex beat and irregularity of the heart's action, increased by deep respiration, are not uncommon. Fleeting disturbances of temperature may be observed, and quickened respiration is the rule after exertion, but may also occur in the resting state. Coldness, blueness, or wetness of the palms and soles is frequent. Tremor of the hands is the rule. Deep reflexes are usually exaggerated. The urine is hyperacid and the output of calcium is increased, chiefly in the form of calcium oxalate crystals. Spermatozoa are very common in the urine. There is an increase of white corpuscles in the blood to 12,000 per c.mm. on the average, the increase being chiefly in the lymphocytes. The alteration of the blood lies in the deficiency of those salts, which, acting as buffers, ease the shock to the reaction caused by the addition of acids or alkali. In their absence the acids evolved by muscular exercise tend to irritate the respiratory centres.

In dealing with the cases at the Mount Vernon Hospital a preliminary sorting eliminated the cases of early phthisis, frank exophthalmic goitre, mitral stenosis, aortic regurgitation, and aneurysm. In Dr. LEWIS'S opinion the great majority of those patients who have merely systolic murmurs at apex or base prove not to have valvular disease. He regards auscultation as the least valuable method employed in this sorting. As to this, Dr. ALEXANDER MORISON'S protest against the modern contempt for cardiac murmurs demands consideration; if it is true that not long ago we exaggerated the significance of murmurs, that is not to say that nothing is to be learnt from their detection. A second sorting of the cases was then carried out by more detailed inquiry and by the response to graduated exercises. Where the symptoms dated from rheumatic fever or there had been recurrent rheumatism the men were not regarded as suffering from effort syndrome. Dealing with the remainder, Dr. LEWIS reports that malingering in the sense of simulation of the full symptoms of the malady is very rare, but conscious exaggeration of symptoms is almost certainly common. Of 93 patients, only 2 wished to return to active service, 41 wished for home service, and 50 for discharge from the Army. No doubt this mental attitude influences recovery. A valuable point that has been determined is the high incidence of the condition among men who were formerly in sedentary occupation. There is real necessity for more tender methods in the initial stages of training the conscript who for years has been accustomed to take no exercise. The frequency with which the symptoms develop during convalescence from febrile and intestinal affections suggests the desirability of a graduated system of re-training in such cases, while rest in bed, Dr. LEWIS holds, should be avoided at all stages of treatment, except in instances of severe præcordial pain, severe headache, or severe giddiness. It is quite obvious why the inclination of many of these soldiers to stay in bed should be discouraged; a high proportion of them are of neurotic temperament, and self-abuse is by no means unknown among them. Occupation is clearly indicated, and light employment in the open air with graduated exercises and general hygienic measures are the best therapeutic means we have. No suggestion should be made that the heart is affected. As to drugs, bromides may be of service in the initial stages, but later they are of no avail. Digitalis is without influence in these cases, and the report suggests, therefore, that its use should be discarded, the only soldiers in whom it has a real value are unfit to remain in the Army. On the lines of treatment here described it is claimed that the duration of the incapacity is considerably reduced. The average duration of stay at the hospital is now, we understand, six weeks.

As to the cause of the condition, Dr LEWIS'S conclusions are mainly negative That it is particularly apt to occur in men who have lived a sedentary life and have had some form of infection he is clear, he is satisfied that tobacco is not responsible for producing it, but is also sure that it aggravates the condition, once it has been produced Alcohol is certainly not a cause He rejects the theories of bacteræmia, toxæmia, and hyperthyroidism. On the other hand, Dr STRICKLAND GOODALL in a recent Chadwick Lecture considered the nervous and irritable heart to be due to a compensatory hyperthyroidism, initiated by excessive emotional stimulation of the supra renals, and a somewhat similar view was put forward recently by Dr LANGDON BROWN in the Hunterian Society's Oration.[1] Dr LEWIS admits that the patients show nervous symptoms, but to a less extent than those commonly classed as neurasthenics He concludes that "it is conceivable that the symptoms arise not from poisoning by toxic products but by products of faulty metabolism engendered by infectious disease The same fault of metabolism might reasonably be considered to arise from chronic infections of different types" He regards the changes in the blood and urine as strongly supporting this view We would suggest that this faulty metabolism may yet be found to be associated with one of the ductless glands, even though the thyroid may not be that one In the course of the research at the Mount Vernon Hospital Dr F R FRASER and Dr R. McN WILSON have found from their observations upon apocodeine and adrenalin that the sympathetic nervous system is more easily stimulated and also more easily depressed, but whether this is due to hypersecretion of the adrenal glands has not been determined. In this connexion the effect of acute infections in exhausting the chromaffin material in the adrenals is certainly suggestive

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[1] THE LANCET Feb 24th, 1917 p 293

THE LATE MR. LEONARD GEORGE BOOR —There died recently at Nelson N Z, in his ninety second year, Mr L G Boor, who was educated at Christ's Hospital, London, and received his medical training at Westminster Hospital, where he was house surgeon in 1851 In the following year he took the M.R C S Eng, and practised in London till 1854, when, his health failing, he went to New Zealand, and, after a short experience of farming accepted in 1870 the appointment of surgeon to the Nelson Hospital and Asylum, which he held for 27 years Mr Boor was an enthusiastic supporter of the Volunteer movement, and was a brigade-surgeon in the New Zealand Defence Force, taking part in 1881 in the Parihaka Expedition against the Maoris, and receiving in the following year the Imperial Volunteers Decoration He was a prominent Freemason

THE CANCER HOSPITAL —At the recent annual meeting Colonel J W Webber, who presided, said that at the beginning of the war accommodation was placed at the service of the War Office and many soldiers had been treated by massage and electrical means and their return to service facilitated In the research department important investigations had been carried out During 1916 793 new cases were admitted to the wards, an increase of 20 on the preceding year, while new out-patients numbered 1519 as compared with 1424 in 1915 The total attendances of out-patients had increased from 16,154 to 23,922, and the daily average number of beds occupied was 90, or an increase of six on the preceding year The financial statement showed a deficit of £9165 on the working expenses Mr Charles Ryall, chairman of the medical committee, said he thought that no hospital had suffered more by the depletion of its honorary medical staff than the Cancer Hospital

Annotations.

"Ne quid nimis"

CHILD MORTALITY

IN a supplement to the forty-fifth annual report of the Local Government Board Sir Arthur Newsholme, medical officer of the Board, has analysed the causation of deaths occurring in England and Wales during infancy and in the next four years of life The statistics relied upon are those of the years 1911–1914, practically the four years immediately preceding the war He cites the shuddering figures of infantile mortality in some of our crowded centres, and proves by their contrasts offered in other centres, as well as in rural areas, that increased organised endeavour would save for the country a large proportion of the sacrificed babes, as well as preclude the deterioration of those who emerge alive from their first year's experience of the world In common with the report of the Unionist Social Reform Committee, he does not disguise the part played in the slaughter of the innocents by lamentable housing conditions, but without laying undue stress upon this matter alone a reticence that has its wise side, for many men and women, anxious to play their part in helping their fellows, have been driven into the inert watching of much infant suffering by the belief that it was all due to bad housing, and that bad housing could not be bettered This is a mode of thought that requires correction Even in the most backward of the towns and boroughs mentioned in Sir Arthur Newsholme's black list much saving of child life has already been secured The component factors producing excessive loss of child life vary greatly in different areas, but in every area a large proportion of the total present mortality may be obviated by enlightened administrative action. Sir Arthur Newsholme does not consider the ignorance of the working class mother to be greater than that of mothers in other classes of society, but her ignorance is more dangerous because associated with relative social helplessness How the environment of the poor child, in its widest sense, may be levelled up towards that of the well to do infant is the main and closely reasoned subject of the report With this levelling up the economic obstacles to improving the housing of the poor will disappear because the greater economy of saving lives and preventing disease will become apparent When communities appreciate that to cure disease or to palliate its sequelæ costs in the long run infinitely more than to prevent disease in children, and when the country holds, as we believe it holds already, that the preservation of the health of the child is the duty of the people, and therefore of the State, there will be little reluctance to finding the necessary money Let the good that has followed in a few localities upon thorough attempts to deal with the housing question, in places like Port Sunlight and Bourneville, be seen by the citizens of other localities in its real proportion, and the victory of reform will be won. All that is necessary is that the community should know on which side true economy lies, and one of the most useful functions of this report is the dissemination of accurate information, free of party spirit and authoritative in tone

THE NATURE AND FUNCTION OF EOSINOPHILE CELLS

THE study of eosinophilia has always been of interest to hæmatologists, and excess of it in the blood is met with in many and various morbid conditions, and gives rise to as many interpretations The origin of eosinophile cells is equally disputable, do they represent an entity special to themselves, or are they ordinary neutrophiles which in certain contingencies, and for reasons connected with biological and pathological factors, are able to assume the character of eosinophiles? Some light is thrown on such questions by Professor R Marchesini, of the University of Rome (*Il Policlinico*, Medical Section, Jan 1st, 1917), who has made a study of the presence of eosinophiles in the blood and in pathological tissues, besides carrying out experiments in animals He found that the simple fact of repeated bleedings for a long period was sufficient to produce in the bone marrow a large excess of eosinophiles, while, on the other hand, substances introduced under the skin caused evident phagocytosis but absence of eosinophilia Thus he considers the question of the origin of eosinophile cells from the bone marrow, as true individualised cells required for special functions, to be definitely solved and, as a consequence, that the eosinophile granules themselves are a product elaborated from the cell or its nucleus destined for functions of special nutrition or repair The multiplicity of pathological instances in which eosinophilia is met with is evidence that it is not bound up with any given pathological process, but rather that it constitutes a special and unique reaction of the organism both in cause and effect Eosinophilia is always present in tuberculosis, this being a disease which causes lesions in the tissues, but it sometimes seems to disappear from the circulation whenever owing to the onset of destruction of the tissues, and hence rupture and greater permeability of the vessels, the accumulation of the eosinophiles at the damaged site is facilitated Moreover, in the most severe forms of tuberculosis their production becomes exhausted owing to the toxic and cachectic state of the whole organism and with it of the bone marrow In benign cases of tuberculosis, where the foci remain shut off through necrosis of the vessels leading to the tubercle, the localisation of eosinophiles is rendered difficult, but if the stimulus continues, the cells requisitioned from the bone marrow remain in the circulation in readiness to penetrate wherever it is possible Hence their noticeable presence in the circulation has a favourable prognostic import In asthma the eosinophilia is explained by the condition of semi asphyxia and consequent change in the broncho pulmonary epithelium produced by the accumulation of carbonic acid, a powerful hæmatic poison, all these factors uniting in causing a profound alteration in hæmatopoiesis and a requisition *in situ* of numerous eosinophile cells In parasitic infection the greater or less amount of eosinophiles bears no relation to the nature of the parasite, but is associated only with the lesion caused by it and the tendency in the organism towards its encapsulation. In the granulomata, malignant tumours, and intoxications by hæmatic poisons there is a tendency in the organism towards the protection and repair of the injured tissues and organs and stimulation of the bone marrow to reproduction by the presence of the foreign bodies, which have to be got rid of or encapsuled Professor Marchesini has observed in examining sections of liver infected with actinomycosis and echinococcus that the eosinophiles which are met with in large numbers are arranged in such a manner as to prove that they contribute entirely to the formation of fibrous tissue by means of their granular secretion. In tuberculous infection of the lungs, also, the eosinophiles are most numerous where necrosed tissue has been repaired by young connective tissue As a result of his researches Professor Marchesini believes he has found the clue to the special function of eosinophiles in the organism—namely, that they must be regarded not as simple phagocytic cells, but as nutritive and plasmic cells of a high grade, having a special secretive power for defence, and for preparing a substratum for the rebuilding of substitution tissue wherever there are toxic substances to be neutralised, extraneous matter to be enveloped, animal parasites to be encapsuled, or destruction of tissue to be repaired.

SPRUE

THE war has not resulted in many instances of this tropical disease being seen in this country, but its general prevalence in the East and its occurrence in certain parts of Australia suggest that we must be on the look out for cases of this nature Therefore, we think it will be useful to refer to an excellent summary of what is known of sprue, which is given by Dr A Breinl and Dr H Priestley in the *Medical Journal of Australia* for February Sprue is a chronic inflammation of the alimentary tract, affecting chiefly the tongue, œsophagus, and small intestine This leads to degenerative changes, ulceration, and to atrophy of the liver Characteristic clinical features are the passage of numerous large, frothy, clay coloured stools, the general intractability of the diarrhœa, the intermittent course, and the progressive wasting The cause of sprue is unknown It was thought that because, from the tongue and fæces of most of the cases, certain yeast like organisms could be isolated that these were the causal agents Castellani isolated quite a number of strains, and hints that they are the responsible organisms, as do also Bahr and Ashford, but it has been shown that similar yeasts can be obtained from patients suffering from diseases other than sprue Animal experiments have been negative Morbid examination shows hyperæmia of the œsophagus and small intestine as well as ulceration, especially in the lower segments of the small gut Similar ulceration may be present in the large intestine The liver is invariably reduced in size The pancreas is sometimes atrophic and fibrous, at other times it is normal The onset of sprue is insidious, and the early stages may last for weeks or months Generally the first definite symptom is soreness of the tongue A few small rounded vesicles of whitish colour appear on the edge and tip of the tongue, later these break down, forming shallow ulcers with ragged edges, which persist for a varying period At the same time there is a patchy desquamation of the epithelium which may spread over the dorsal surface, leaving an angry looking, smooth, shiny surface In the later stages the tongue presents a complete denudation of its epithelial layer and shows longitudinal and transverse fissures which bleed easily Gastro-intestinal symptoms dominate the earlier stages Obstinate indigestion, distension and flatulence, and belching of gas occur during the whole course of the disease Diarrhœa is present to a greater or less extent throughout The stools vary in character, but often present their characteristic appearance Sallowness and definite pigmentation come on, the skin shows atrophic changes and becomes dry and shiny The general aspect of the patient alters and he becomes listless, depressed, and anxious The temperature, blood, and urine show no changes Sprue needs to be diagnosed from pellagra and from pancreatic disease From the latter, diagnosis may be extremely difficult, especially as there is some probability that the pancreas is actually implicated in sprue, from pellagra the differences in the skin changes offer the most certain distinguishing features Sprue may be fatal, if contracted late in life it nearly always is so, but early cases with suitable care, and especially by removal from the endemic area, may be cured Treatment by drugs is disappointing, emetine and collosol argentum have been tried Dietetic treatment is required In the early stages a rigid milk diet is the best, and an ampler diet must be governed solely by the general condition and bowel activity of the patient

HOSPITAL TREATMENT FOR POOR-LAW PATIENTS IN IRELAND

A CURIOUS anomaly exists in the law governing the powers of Poor law guardians in Ireland to provide special hospital treatment for Poor law patients The guardians have only power to send to the hospitals for special treatment such patients as are already inmates of the workhouse They have no power to provide any special hospital treatment for the poor patients under the care of dispensary medical officers It has long been the custom for dispensary medical officers, who considered patients to be in need of special hospital treatment, to have them formally admitted to the workhouse hospital, and forthwith despatched to a city hospital for the required treatment It is clear that in many cases no other procedure would have provided the required treatment in time to be of service Up to recently, the guardians and the Local Government Board recognised this fact, and no obstacle was put in the way of Poor law medical officers obtaining for their patients whatever treatment they thought right A few weeks ago, however, the guardians of the Listowel union, co Kerry, found themselves surcharged by the Local Government Board auditor for the expenses incurred in obtaining special hospital treatment for a patient who had only spent one night in the workhouse, and had not been an inmate at the moment the guardians made an order authorising the treatment If this ruling of the auditor is to be taken as laying down a precedent, it may interfere seriously with the efficient treatment of the sick poor in Ireland

THE ETIOLOGY OF HÆMORRHAGIC RETINITIS

A THESIS by M Amsler based on 164 cases of hæmorrhagic retinitis occurring in Lausanne (*Correspond bl f Schw Aerzte*, 1917, p 318) gives an interesting analysis of the etiology of this complaint The cases were taken from both private and hospital practice Stated in percentages, the etiological factors were as follows Arterio sclerosis, 55, heart disease, 8, albuminuria, 8, glycosuria, 3, menopause, 6 The percentage incidence in successive decades from 20 to 70 years was 4, 7, 13 27, and 36 respectively, and 13 above 70 years Nearly two thirds of the cases were in women, and in them the prognosis was relatively more favourable, especially in the cases associated with the menopause In 20 cases the typical picture of thrombosis of the central retinal vein was present, and in one of these—a woman aged 47 years—sight was restored in six months, and vision was still 4/5 four years later The low percentage of cases of albuminuria in these statistics is somewhat remarkable, but tends to support the views recently expressed by Dr P C Bardsley[1] that the prognosis in cases which show moderate vascular disease of the retina is not so bad as has generally been thought As has been shown by Mr Foster Moore,[2] cases of retinal vascular disease must be classified in various categories, the prognosis varying according to the particular type It is therefore somewhat misleading to regard hæmorrhagic retinitis as a single clinical entity, it is a symptomatic condition which must be evaluated according to concomitant factors

SUCCESSFUL OPERATION FOR A BULLET LODGED IN THE WALL OF THE LEFT VENTRICLE

WE remarked last week that the surgery of the present war had furnished instances of the successful extraction of bullets from the heart substance, while removal from the heart cavity has been reported At a meeting of the Académie de Medecine de Paris on March 3rd Professor Gaudier, of Lille, described an interesting case in which a bullet lodged in the wall of the left ventricle and had little disturbing influence on the heart's action The patient was a Russian sergeant, aged 23 years, who was wounded near Monastir on Oct 1st, 1916 While lying prone on the ground a bullet grazed the left parietal bone and passed through the supra clavicular fossa He became unconscious for a time which he could not fix, and was then able to get up Finding himself alone, he walked until he met some soldiers He was in a feeble state and walked with difficulty He could not stand upright and advanced stooping forwards He felt a severe pain at the apex of the heart, especially when he tried to straighten himself. While being carried to a dressing station he again became unconscious and passed the night in that condition He was taken by motor ambulance and train to Salonica During the journey he regained consciousness, but suffered severely from pain in the region of the heart and could not lie on either side he rested either on his back or on his abdomen He was admitted to hospital, where the wound suppurated a little He became very weak and the cardiac pain was continuous and was increased by deep inspiration He was sent to France, where he arrived on Oct 27th with the parietal wound still suppurating but the supra clavicular one healed. The pain still continued About Oct 15th he was able to get up and go about a little His general condition was good While resting the respiration was normal and the pulse 80 After going upstairs there was slight dyspnœa and the pulse varied from 85 to 90, there was no intermission Auscultation showed nothing abnormal He was put on ordinary diet and allowed to get about, but as the pain still persisted and there was some dyspnœa after rapid walking he was submitted to radioscopy, which showed that the bullet lay transversely near the apex of the heart and followed all the movements of the left ventricle It was independent of movements of the diaphragm Under ether the third and fourth left costal cartilages were exposed and divided, the pleura incised, and the "costal shutter" turned outwards by an assistant The pericardium was incised vertically for a distance of 5 cm The heart was seized in the left hand and brought outside the pericardium In the anterior wall of the left ventricle was a transverse ridge 1¼ cm long above the apex This was due to the embedded bullet, which was removed The pericardial incision was closed with catgut and the cartilages sutured During the operation there was an occasional intermission of the pulse Recovery was complicated by cough and some fever and some scattered pulmonary râles were heard The projectile was a leaden Bulgarian bullet, 42 by 7 by 5 mm, with a sheath of "maillechort," flattened at its centre Similar cases are rare, but one almost identical has been recorded by Duvergen, of Bordeaux

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[1] British Journal of Ophthalmology April 1917

[2] Quarterly Journal of Medicine, January 1917

THE SPECIAL SCHOOL CODE

THE alterations in the regulations of the Board of Education for special schools for blind, deaf, defective, and epileptic children (Special School Regulations, 1917, Cd 8505, price 3*d* net, pp 53) represent for the most part the changes necessary to bring the regulations more into accord with the best existing practice in special schools and also in ordinary public elementary schools Since 1909, when the last regulations were issued, more extensive provision has been made for open air education and playground accommodation, the new regulations ensure that special schools shall not fall short of the standard set by the present day public elementary school Again, the facilities afforded for the detection of mental and physical defects by the institution of the School Medical Service have resulted in an increase by 50 per cent of the number of children in attendance at special schools New types of schools have been provided, not only are partially blind and partially deaf children receiving appropriate instruction, but tuberculous and delicate children are afforded opportunities of attending open air schools, where not only is the instruction more suited to their particular needs but their return to health is facilitated In view of the duty placed on local education authorities by the Defective and Epileptic Children Act, 1914, of providing classes or schools for feeble minded children, a statement of the present requirements of the Board in respect to the arrangements of special schools for mentally defective children is opportune Among other important features is the provision that blind and deaf children should be examined from time to time by a medical practitioner possessing special ophthalmic or aural experience, in the case of schools provided by local education authorities the Board requires that the medical inspection and examination of the children should be conducted by the school medical officer of the authority or under his immediate supervision. In the case of blind children the Board points out that where suitably qualified blind teachers are on the staff of the school their services would be especially useful in giving touch developing lessons to all the classes as well as lessons in Braille reading and writing A further note of progress is sounded by the inclusion of regulations for trade schools for special school ex scholars The new regulations indicate that the interests of defective children are not being overlooked during the waging of a world wide war

MALARIA IN TRINIDAD

A REPORT on malaria in Trinidad has been recently issued[1] by Dr C F Lassalle, formerly acting assistant medical officer of health for the colony, but now, we understand, promoted to a higher and more responsible office in the Public Health Service of the island. This report is in three parts, relating to (1) a spleen census made in 1914, (2) an anopheles survey carried out in 1914–15, and (3) a description of the mosquitoes found in Trinidad during an inquiry made in 1915

The spleen census—The spleen census of 1914 is the second that has been carried out in Trinidad, the first having been made in the previous year, when out of 17,495 children examined 3134, or 17 91 per cent, had enlarged spleens In the second spleen census now reported upon by Dr Lassalle 25,927 children came under examination and 3658, or 14 1 per cent, showed splenic enlargement, in addition, 1576, or 6 per cent, of those examined were suffering from anæmia. The results of the Trinidad spleen census are compared with similar examinations carried out in other countries In Mauritius, for example, in 1907–8, out of 31,022 children, 10,595, or 34 1 per cent, showed enlarged spleens, and in Ceylon, in 1908, out of 92,258 children submitted to the test, 31,421, or 34 per cent, had splenic enlargement Compared with these other two island colonies the effects of malaria in Trinidad, as tested by the presence of enlarged spleen among the children, are not specially severe, and Dr Lassalle predicts that, with enforcement of the appropriate preventive measures now in vogue, the colony will in the future show even smaller effects of malaria than at the present time A number of statistical tables relating to the various areas in the island are appended to the report

The anopheles survey—Anopheles surveys of the districts comprised within the colony were begun on March 15th, 1914, and continued up to April 30th, 1915, when they had to be temporarily suspended In all of the districts surveyed large and extensive mosquito breeding grounds were found, as well as others of smaller extent The work was carried out by sanitary inspectors who had been specially trained in the details of a mosquito survey That it is possible to rid a town of anopheles has been completely proved in Trinidad The city of Port of Spain, formerly infested by these insects, may be regarded as free, it being now a very rare occurrence to find an anopheles mosquito Through the constant efforts of the sanitary department of the town even the formerly ubiquitous stegomyia and culex have almost disappeared Dr Lassalle remarks that it may be an impossibility—mainly on account of financial considerations—to eradicate every single mosquito breeding place throughout the colony, but "it is entirely within the range of practical politics" to carry out a scheme of destruction of anopheles breeding grounds within, and for a certain distance around, all towns and villages, plantations, and other centres of population It is obvious that the reduction of the danger of malaria in a locality must be directly proportional to the reduction of the number of breeding places—the intensity of malaria infestation bearing a direct ratio to the number of mosquitoes regularly hatched out Dr Lassalle therefore recommends as a first step in a new campaign against malaria in Trinidad that anti mosquito regulations applicable throughout the entire colony should be introduced at once

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[1] Trinidad Malaria Report By C F Lassalle, Acting Assistant Medical Officer of Health The Government Printing *Office, Port of* Spain. 1916 Pp 126

The mosquitoes of Trinidad—In his report on the mosquitoes of the colony, Dr Lassalle says that the collection of eggs, larvæ, adults, &c, obtained in the course of the above mentioned anopheles survey provided material for the study of the varieties of Trinidad mosquitoes in a more comprehensive manner than would otherwise have been possible Specimens were sent to the British Museum, the Imperial Bureau of Entomology, and to the Bureau of Entomology, Washington, for the identification of certain species A complete list is given of all the Trinidad mosquitoes now known, and a description is also furnished of the most important and best known species Dr Lassalle discusses the association of anopheles larvæ and fish in natural breeding places There seems to be some difference of opinion regarding the value of larvivorous fish in keeping down the breeding of anopheles under natural conditions In concluding his report Dr Lassalle expresses the opinion that further investigations will doubtless unearth other species of mosquito

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CERTIFYING SURGEONS AND COMPENSATION FOR LOSS OF INCOME

CORRESPONDENCE has recently passed between the Association of Certifying Surgeons and the Home Secretary on the possibility of compensation being granted to those surgeons who have lost income in consequence of the abolition of investigations into accidents A loss of £12,000 per annum has been incurred by the medical profession as the outcome of the economical decision of the Home Office to dispense with these investigations, and most of this loss falls upon surgeons who hold important appointments in manufacturing districts, quite a number of them suffering to the extent of between £200 and £300 a year It was pointed out by the association that surgeons holding the better appointments had given up other work by arrangement with the Home Office, and that many had combined the duties with those of other public appointments, such as medical officer of health, when the loss could not be made good by taking fresh work The association represented also that when public officials holding appointments on similar terms are dispossessed compensation invariably follows The Home Secretary, we learn, does not see his way to grant compensation, considering that the terms of employment preclude it, and that the increase of remuneration under certain new duties should be compensatory But the association has pointed out that the new duties of their members had been of very little monetary advantage to them outside the Pottery districts, the most remunerative work of the kind instanced (that of appointed surgeon under special rules) being open to the whole profession.

Mr John H Morgan, C V O, has gone to France in the service of the Croix Rouge Français, and is taking command of a large hospital at Nevers

IRELAND

(FROM OUR OWN CORRESPONDENTS)

The Health of Belfast

AT a meeting of the city council of Belfast, held last week, it was reported that from Feb 8th to March 17th 96 cases of infectious disease had been notified—viz, 10 cases of typhus, 36 of typhoid, 25 of scarlet fever, 12 of diphtheria, and 13 of erysipelas During the four weeks ended March 17th last there were actually 12 more deaths than births (751 to 739), 52 of the deaths being due to zymotic disease 112 deaths were due to pulmonary tuberculosis 136 to respiratory diseases (exclusive of pneumonia), and 108 to pneumonia The annual average death rate from all causes was very high—24 9—while in the corresponding period of 1916 it was 20 2 The unwelcome reappearance of typhus (20 cases in all), the prevalence of typhoid (upwards of 90 cases at present in the Fever Hospital), and the rise in the general death rate are all disquieting features of the present health of the city

The Belfast Ophthalmic Hospital

At the annual meeting of the Belfast Ophthalmic Hospital held on April 6th it was reported that during the year 1916 there had been treated 4206 cases of eye disease and 1704 cases of diseases of the ear and throat, 129 urgent cases were admitted to the wards for morning dressings and 204 patients attended, making a total of 6243 passing through the hospital During the past two years, owing to five of the surgeons to the hospital being engaged elsewhere in war work, the out-patient department had only been opened on two days a week, yet the number of patients had increased, and Dr J W Browne, the senior member of the staff, single handed, has carried on all the work Financially there was a balance of £28

Hilden Convalescent Hospital, Belfast

Through the generosity of a well known member of an old Belfast family—Mrs Harold Barbour—(who gave £2000 for the equipment of the institution, and has, in addition, undertaken to subscribe £1000 per annum for its maintenance during its existence) another hospital has been founded in Belfast and district for the reception and treatment of wounded soldiers It is called the Hilden Convalescent Hospital, having been named after the great thread works with which the Barbour family is associated and is situated in one of the healthiest districts of Belfast, Galwally Park It has been established by the Ulster Joint Committee of the British Red Cross Society and the Order of St John, and is the first hospital opened by these organisations in Ulster A grant of £3000—part proceeds of "Our Day" collection—has been received from the Red Cross The institution itself, which will be shortly opened, contains 51 beds for patients and an extensive wooden building, in course of erection, as a wing to the main hospital, will accommodate an additional 75 beds. The medical staff so far appointed is as follows, all the officers being honorary —Medical superintendent, Dr John Macintosh, visiting surgeon, Dr James Taylor, visiting physician Dr J R Davison, consulting physicians, Sir John Byers, Dr R W Leslie, Dr H L M Kisack, Dr W L Storey, and Dr W Calwell, consulting surgeons Dr Robert Campbell, Dr Howard Stevenson, and Dr S T Irwin, anæsthetist, Dr W C L Fielden, radiographer, Dr S Allworthy, surgeon-dentist, Mr S A. Deans, L D S

Maternity and Child Welfare

At the annual meeting of the Belfast Health Society, held in the city hall, Belfast, the Lord Mayor presiding, the total attendance of mothers and infants at the various "babies' clubs" was reported to have nearly reached 8000, while 8145 pints of milk had been distributed, the mothers paying half the cost. An address on child welfare was given by Sir John Byers, who suggested that Belfast should take part in the proposed National Baby Week, to be held from July 1st to 7th

April 10th

CENTENARIAN —Mrs Elizabeth Elvy has died at Eastling, Faversham, in her 101st year

Public Health.

REPORTS OF SCHOOL MEDICAL OFFICERS

IN *Berkshire* the number of elementary school children under the county education authority was 22,500 in 1915 The number of children examined as entrants, intermediates, and leavers was 2596 The acting school medical officer, Dr W Sisam, states that from May onwards the routine medical inspections had to be suspended, owing to depletion of the medical staff

Nutrition was found to be satisfactory in 87 per cent and in only 0 65 per cent. was it actually bad Cleanliness was satisfactory in 99 per cent. In no child were pediculi found on the body and only in six cases were they found in the head The eyesight was normal in 85 per cent of the children tested, and in only 5 5 per cent was it 6/18 or less Organic heart disease was found in 19 children (0·73 per cent) in 10 children (0 38 per cent) pulmonary tuberculosis was diagnosed and in 79 (3 04 per cent) it was suspected Non pulmonary tuberculosis (glandular articular &c) was found in 10 other children (0·38 per cent) The only treatment undertaken by the Education Committee was that for ringworm by means of X rays which was carried out at Reading Newbury and Oxford in 47 cases with satisfactory results

An education area entirely rural in character and occupation is that dealt with in Dr Frank Robinson's report on schools in *Cambridgeshire* during 1915 the borough of Cambridge not being included The number of children on the register was 12,406, of whom 3637 were examined according to the routine inspection of age groups

Nutrition was satisfactory in 83 7 and "very bad" in 1 3 per cent. In only two children were pediculi found on the body (0·05 per cent.) and in 13 cases (0 35 per cent.) in the head The vision was normal in each eye in 85 per cent. of the children tested In 6 children (0·16 per cent) organic heart disease was diagnosed Only in 1 child was pulmonary tuberculosis definitely found to be present but in 19 it was suspected (0·52 per cent) In 11 others non pulmonary forms of the disease were found Ringworm shows a most satisfactory decline compared with former years only 6 cases having been met with in routine inspection In one school there were 5 cases in one family (specially inspected) the father persistently refusing treatment "in spite of 'repeated visits by the medical staff during the year'" until prosecution was threatened This demonstrates the necessity for prompt action in dealing with culpable ignorance or obstinacy of this kind The percentage of unvaccinated children which in 1909 was 6 3 has now risen to 19 1 and in the youngest children newly admitted to school is as high as 43 5 compared with 6 7 per cent in 1909 The examination of visual defects has been carried out satisfactorily in the outlying districts by Dr Jessie Gellatly a portable electrical ophthalmoscopic apparatus with trial lenses test-types &c. adapted for bicycle transport having been employed at a total cost of £8 15s retinoscopy is done in the school cloak rooms the windows being brown papered Infectious disease was exceptionally heavy in 1915 measles necessitating 87 school closures Swabbing for diphtheria was extensively practised with good results positive evidence of infection was obtained in 31 cases

In presenting his report on schools in *Cheshire* Dr Meredith Young, the chief school medical officer, alludes to the strain on the administration during the year owing to war conditions The children examined in the entrant, intermediate, and leaver groups during 1915 numbered 17,890

Nutrition was below normal in only 7 per cent., and in no case was it actually bad Cleanliness of the body was also satisfactory in all but 2 per cent and pediculi were only found in 0·3 per cent. In 0·6 per cent they were present in the head Normal vision in each eye was found in 71 4 per cent. Organic heart disease was diagnosed in 48 children (0 27 per cent) pulmonary tuberculosis was detected in 17 children (0 09 per cent) and suspected in 42 others (0 23 per cent.) tuberculosis other than pulmonary was met with only in 34 children (0 19 per cent) Attention is drawn by Dr Margaret Ormiston assistant medical officer for South Cheshire to a senseless but very common practice in the clothing of children—viz. the excessive number of garments covering the chest and trunk as many as 11 layers being sometimes met with while very short frocks and bare knees may lead to chill of the extremities and growing pains. Children suffering from ringworm of the head are allowed in school if provided with a properly fitted cap until cured This procedure was found to be quite satisfactory Thyroid enlargement is reported as being prevalent in the rural districts of Nantwich union and in the Middlewich area several members of a family being affected in many instances and transmission being mostly through the maternal relations This would be an interesting subject for investigation as goitre or "Derbyshire neck" has not been hitherto noted in this part of the country

Owing to depletion of the medical staff on account of the war the work of school medical inspection in the county of *Durham* was limited, during the latter half of 1915, to the examination of ailing and defective children and to re inspection of children previously found to need treatment Previous to this 16 126 entrants and leavers had been examined by Dr T Eustace Hill and his assistants

Nutrition was on the whole satisfactory being considered bad in only 0 8 per cent ; in an additional 10 5 per cent it was below normal Cleanliness was also satisfactory body vermin being found in only 0 3 per cent and pediculi capitis in 1 1 per cent. Organic heart disease was detected in 91 children (0 8 per cent.); 57 of these were girls (0·72 per cent) and 34 boys (0 4 per cent) showing a marked discrepancy in the sex incidence Pulmonary tuberculosis was found in only 9 children (0 05 per cent) but was suspected in 36 other cases (0·2 per cent) non pulmonary forms were diagnosed in 0·3 per cent Energetic measures were taken in regard to the presence of vermin under Section 12 of the Children Act and in some bad cases of neglect the parents were sent to prison Unfortunately no treatment is undertaken by the county Education Committee except for defective vision and owing to the absence of the school oculist on active service comparatively few cases received attention

Dr J Middleton Martin's report on *Gloucestershire* schools deals with the routine inspection of 10,579 children, as well as with 3598 special examinations

Of the former category comprising the entrants, leavers, and intermediates the nutrition was below normal in 16 86 per cent but in only 0·09 per cent was it actually bad Body cleanliness was satisfactory in 94 5 per cent , body vermin were found in only a single instance on the head they were found in 15 children (0 14 per cent.) all being girls except two Great improvement has taken place in regard to this condition the number infected being only about half what was found when examination by the nurse was instituted first in 1908 and a badly infected head being now rarely discovered In the Tetbury urban district the percentage of infection has been reduced from 39 in 1909 to 7 in 1915 Vision in the right eye was perfect in 86 per cent and in the left eye in 85 per cent.; the proportion of children having normal vision in each eye is not stated Organic heart disease was diagnosed in 298 children (2·82 per cent.) 134 of these were among the entrant infants giving a percentage of 2·91 which seems to be remarkably high Pulmonary tuberculosis was only found in 3 cases (0·03 per cent) and suspected in 15 others in 11 children non pulmonary forms were found Treatment for teeth is carried out by the county authority as well as, in certain districts by voluntary agencies supported by local effort. Infectious diseases were especially prevalent in 1915 and 206 departments had to be closed on this account—nearly double the previous maximum of 118 in 1913 There were however fewer cases of infectious skin disease (ringworm, impetigo and scabies) than in any previous year

In *Kent* the number of children on the roll of schools under the county education authority was 84,707 and the number examined during 1915 in the code groups was 20,509

Of these children 94 per cent were well nourished and only 0 1 per cent were in a bad condition in this respect 92·2 per cent were clean as regards the body Defective vision was much more prevalent among girls (13 2 per cent.) than among boys (9·6 per cent) Heart affection (organic or functional not distinguished) was diagnosed in 2 1 per cent being somewhat more frequent in girls (2 4 per cent.) than in boy (1 9 per cent.) Tuberculosis of the lungs was found in 0·6 and suspecte in an additional 0 3 per cent and other forms of the disease in 0 1 pe cent. As to the age incidence of the specific fevers in children an interesting table shows that 50 per cent. of the boys aged 5 had already had measles At the age of 9 the percentage was 76 3 at 13 it was 83 9 The analogous percentages for whooping-cough were 34·6 51 and 51 and for scarlet fever 2·8 6 4 and 11·2 respectively For diphtheria the ratios were 1 5 3 6 and 6·2 per cent. The ratios for girls were for each disease very similar to those of the boys A table of heights and weights of 2003 boys and 2000 girls shows that in height boys and girls (in Kent) are almost equal at 9 years of age (49 7 and 49·8 inches) and at 13 years (55 6 and 55·8 inches) In weight the girls outgrow the boys in these four years; at 9 years the boys average 56 1 lb and the girls 54 6 lb at 13 years the boys have increased to 75 7 lb but the girls have gone up to 77 4 lb The relative increase is however, not so marked as in children in London where girls of 13 are on an average nearly 3 lb heavier than boys of that age. The condition of enlarged tonsils and adenoids (not differentiated) was diagnosed in 21 7 per cent of the boys and 23 4 per cent. of the girls An abnormally large proportion in a group of cases was found among children habitually taking their dinner at school because of distance from their home or for some private reason the prevalence among these children was three times as great as among those who go home The connexion of this condition with deafness was shown by the fact that out of 516 cases of defective hearing in 28·2 per cent. enlarged tonsils were present It is gratifying to hear that care of the teeth is becoming general the demand for toothbrushes almost exceeding the supply provided by the Education Committee.

Owing to war conditions the routine medical inspection of school children in *Norfolk* during 1915 had to be suspended in April Matters requiring urgent attention and the management of outbreaks of infectious disease also the examination of children specially brought forward by the teachers as needing medical care, were dealt with by Dr J T C Nash the county medical officer of health, personally during the remainder of the year His report deals with a total number of 3847 children submitted to the routine examination

Of these children 86 93 per cent. were well nourished and in only 0·18 per cent was the nutrition actually bad. All the children were clean except 1 5 per cent and in only one child were body vermin found to be present Organic heart disease was diagnosed in 0 18 per cent and non pulmonary tuberculosis in 0 32 per cent. Not a single case of tuberculosis of the lungs was definitely diagnosed and in only one child was it suspected Defective vision (less than 6/9 in either one or both eyes) was found in 7·93 per cent. The provision of X ray treatment for ringworm being impracticable, systematic application of mercurial ointment was carried out in a ringworm class of 33 children with such good effect that at the end of the year there were only two children still uncured

In *Northamptonshire* the work of medical inspection in 1915 was carried out by Miss M J Keers M B , after the departure of Dr J H Mason on military service in April , 4571 children were systematically examined

Of these 95·4 per cent. were well nourished and only one child was considered to be actually in a state of malnutrition 95·4 per cent also were clean and in only three instances were body vermin detected Organic disease of the heart was present in 0 59 per cent. and pulmonary tuberculosis in 0 46 per cent other forms of this latter disease being found in 0 24 per cent Normal vision was present in 67 per cent of the 1898 children tested The weights of the boys (73½ lb) and girls (73½ lb) in the urban districts at 12 to 13 years of age were practically equal in the rural districts the corresponding figures were 74¾ lb for the boys and 77¼ lb for the girls In concluding his report Mr Charles E Paget the county medical officer notes that owing to the war a larger number of children than usual have failed to receive treatment especially in respect to defective vision and throat cases

In *Warwickshire*, during the early part of 1915, the routine medical inspection of 1979 school children was carried out in addition to special examinations, after June 1st, owing to war conditions only children specially selected by the teachers and health visitors were examined, to the number of 1112

A considerable proportion of defects was found in these special cases treatment of which was undertaken with benefit the interruption of the routine inspection though making a regrettable hiatus in the progressive improvement of the health of the school children in the county was probably unavoidable Verminous heads and ringworm give a good deal of trouble and treatment of these cases in rural districts is full of difficulty as the distance from the nearest practicable treatment centre is often considerable No scheme for the provision of treatment by the county council of defects found in school children has yet been adopted Dr Bostock Hill mentions the difficulties that have been experienced in carrying on the work of medical inspection on account of the war and is satisfied with the results that have been obtained Of the 1979 children examined as entrants and leavers nutrition was below normal in 15 2 per cent. being actually bad in only 0 4 per cent.; body cleanliness was unsatisfactory in 4 1 per cent organic heart disease was detected in 0·9 per cent, and pulmonary tuberculosis in only 0 1 per cent

The report on school medical inspection in the *West Riding of Yorkshire* in 1915 is very short on account of the absence of nine of the medical staff (including Dr J R Kaye, the school medical officer) on military service The work has been maintained in spite of difficulties due to this cause The number of scholars on the school roll was 200 513, of whom 38 023 were examined at the routine inspections, besides 18 971 *special cases*

Of the routine cases—entrants intermediates and leavers—0·18 per cent. were poorly nourished and 14 26 per cent. were verminous as regards the head Pulmonary tuberculosis was diagnosed in 0·23 per cent. and other forms of tuberculosis in 0 38 per cent Of the whole number of children—entrants intermediates, and leavers—26 70 per cent were unvaccinated of the entrants the proportion was 45·60 per cent of the leavers 14 69 per cent These figures speak for themselves At 17 secondary schools the entrants were inspected of ages 11 to 14 17 14 per cent. were unvaccinated and 6 31 per cent. were verminous It is unfortunate that several of the care committees have ceased to exist, leaving in their respective districts the whole visiting work to be done by the school nurses

URBAN VITAL STATISTICS

(Week ended March 31st 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 18,000 000 persons, the annual rate of mortality was 17 7 against 18·5 and 16 5 per 1000 in the two preceding weeks In London with a population exceeding 4 000 000 persons, the death rate was 17 8, or 0·3 per 1000 above that recorded in the previous week among the remaining towns the rates ranged from 4 7 in Ealing 5 4 in Acton and 8 4 in *Oxford to* 24 5 in Bolton 24 7 in Rochdale and 25 5 in Plymouth The principal epidemic diseases caused 406 deaths which corresponded to an annual rate of 1 2 per 1000 and included 252 from measles 57 from whooping-cough 43 from infantile diarrhœa, 41 from diphtheria 10 from scarlet fever and 3 from enteric fever The deaths from measles showed a further increase compared with the numbers recorded in the nine preceding weeks and caused the highest annual death rates of 3 3 in Plymouth and in South Shields, 3·9 in *Ilford* 4·0 in Walsall and 7·2 in Dudley The 795 cases of scarlet fever and the 1377 cases of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 22 and 100 below the numbers at the end of the previous week Of the 5866 deaths from all causes in the 96 towns, 181 resulted from violence The causes of 54 of the total deaths were uncertified of which 11 were registered in Birmingham 8 in Liverpool and 4 each in London Manchester and South Shields

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500 000 persons the annual death rate was equal to 17·9 against 18 3 and 16·2 per 1000 in the two preceding weeks The 418 deaths in Glasgow corresponded to an annual rate of 19·5 or 3·2 per 1000 above that recorded in the previous week and included 23 from whooping-cough 16 from measles 5 from infantile diarrhœa, 3 from diphtheria, 2 from scarlet fever and 1 from enteric fever The 116 deaths in Edinburgh were equal to a rate of 18 2 per 1000 and included 7 from whooping-cough 5 from measles 2 from infantile diarrhœa and 1 each from scarlet fever and diphtheria.

Irish Towns —The 172 deaths registered in Dublin were equal to an annual rate of 22·5 or 3 8 per 1000 below that recorded in the previous week and included 17 from measles 7 from infantile diarrhœa and 1 each from whooping-cough and diphtheria. The 133 deaths in Belfast were equal to a rate of 17 6 per 1000 and included 4 from measles 2 each from enteric fever and infantile diarrhœa and 1 from scarlet fever

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be Temporary Surgeon F A. Knott

The following appointments have been notified —Fleet-Surgeon A. Woollcombe to *Pembroke* Temporary Surgeons R W Townley and J L *Pringle to Pembroke*

ROYAL NAVAL VOLUNTEER RESERVE

J T Wood, L D S, to be temporary Dental Surgeon

ARMY MEDICAL SERVICE

Col H A Bruce Canadian A M C to be temporary Colonel

TERRITORIAL FORCE

To be Deputy Assistant Directors of Medical Services Major W E Miles and Capt H Pinto-Leite

ROYAL ARMY MEDICAL CORPS

A J J Johnston, Surgeon General R A (ret.) to be temporary Lieutenant Colonel

Temp Major A. G P Gipps *to be temporary* Lieutenant-Colonel

Temp Major E Webb-Johnson D S O to be acting Lieutenant Colonel whilst commanding a General Hospital

Captains to be temporary Majors L J Rhea Canadian A.M C, N B Gwyn Canadian A.M C C Wollard Canadian A.M C and S R *Harrison* Canadian A.M C

To be temporary Majors: Temp Capts W P Yetts and Wilford V Robinson (whilst commanding troops on a hospital ship), E O Stabb (while employed at the Manor County of London War Hospital)

T G Moorhead to be temporary honorary Major

Temp Capt C G G Keane to be Lieutenant and to be granted the rank of temporary Captain

Temp Capt. J D Gimlette relinquishes the rank *of* temporary Major on reposting

The undermentioned are granted temporary honorary rank whilst serving with No 22 General Hospital —As Lieutenant-Colonel: H Cabot As Major G C Shattuck E G Crabtree As Captain E S Bridges As Lieutenant E D Busby E S Welles F B Grinnell E S Fish

To be temporary Captains Lieut T C Bowie and C Robinson Temp Lieuts E H Wheeler and F G Thomson and F S B Fletcher S G Billington H S Berry G B Flux B N Murphy M C late Captain R A.M C

To be temporary Lieutenants H McLean R G Maglione R Appleton S W Milner J E Mitchell J B Wilkie G McNeill, H C Quirke T McFetridge W L. G Anderson, H C W Wood W G Attenborough A G Stewart R B Fletcher J G B Smith E A. Price N Glegg W H Miller C P A. Stranaghan P Murphy R J Croxford A E Baron E C Tamplin F Jubb Temp *Hon* Lieut T B Johnston A M Caverhill L N Morris C H Wagner T B Davies H L Blackley A Armer J B McDougall D S Clarke, J B Ball N S *Lucas* D Young A. A. Wilkinson H E Graham R A. Campbell H Bardsley A W Hare W L. M Day E Wragg G Nelson, D W Anderson

Officers relinquishing their commissions Temp Capts D Lawrie and T J S Moffett, Temp Lieuts D C Wilson W J Greeby and *C B* Richardson and Temp Hon Lieut. W H Thomas (having ceased to be employed with the British Red Cross Society in France)

SPECIAL RESERVE OF OFFICERS

Lieutenants *to be* Captains: D R Hennessy J A. C Kidd S J V Furlong J Y McLean D Roger

A H Mitchell from Aberdeen University Contingent, O T C and J R John from London University Contingent O T C to be Lieutenants

Capt W J Reid relinquishes his commission

TERRITORIAL FORCE.

Major E C M Foster to be acting Lieutenant-Colonel whilst commanding a *Field Ambulance*

Major W E Miles is restored to the establishment on vacating the appointment of Deputy Assistant Director *of* Medical Services.

Capt T S Allan to be temporary Major whilst in command of a Military Hospital

Capt. H Pinto-Leite is seconded while holding the appointment as Deputy Director of Medical Services.

To be Captains: Cap A J W Stephen (from Northern General Hospital) and Lieuts J S Cooper J B Hogarth, H England P G Phillips

Lieutenants *to be* temporary Captains whilst serving with the Medical Unit of the University of London Contingent Senior Division O T C: J H Ryffel and W Wright

A G Harrington to be Lieutenant

Capts A J Archibald and W Love relinquish their commissions on account of ill health Capt W J Deighan relinquishes his commission on account of ill health contracted on active service and is granted the honorary rank of Captain Capt F W A. Stott Attached to Units other than Medical Units relinquishes his *commission* on account of ill health

VOLUNTEER FORCE.

A. F Turner (late Lieutenant 2nd V B Gloucestershire Regiment) to be temporary Captain and Medical Officer 3rd Battalion Gloucestershire Volunteer Regiment

INDIAN MEDICAL SERVICE

Lieut Col H B Melville on return from leave has been posted to Gorakhpur as Civil Surgeon Brevet Col H F Cleveland has been appointed Deputy Director General vice Lieut. Col F E Swinton and Lieut Col James has been elected a member of the Punjab Medical Council Capt R H. Bott has been elected an ordinary Fellow of the University of the Punjab

Col le Bel the chief doctor of the French Canadian Hospital at St Cloud has been presented with the Cross of the Legion of Honour

Correspondence.

"Audi alteram partem

"SOLDIER'S HEART"

To the Editor of THE LANCET

SIR,—The remarks of Captain Adolphe Abrahams[1] and the comments of Dr Thomas Lewis have much interested me, and perhaps I may be pardoned for again trespassing upon your space

The opinion of both Captain Abrahams and of Dr Lewis upon cardiac strain seems to me to be particularly valuable Although I cannot lay claim to the athletic distinction of Captain Abrahams, yet I have been capable of prolonged and strenuous exertion, and having been at the same time interested in morbid affections of the heart, naturally I have paid some attention to the effect of exercise upon the heart As an illustration of the fact that I have at times put my own heart to more or less severe tests, it may be mentioned that although I have long passed the age of youth, in the month of April preceding the outbreak of war I rode on an ordinary "push bicycle" from Taz malt in Algeria to Algiers, a distance of 179 kilometres (112 miles) in nine and a half hours, although my low gear was out of order and could not be used All the hills were ridden some of them no mean ones, and the ride ended over a road paved for six or seven miles with cobble stones The ride also happened to have been during an unusually hot spell of weather for the month of April I was told that the thermometer on the day of my ride had registered 98° F in the shade in Algiers at one hotel

While it has not fallen to my lot to meet with opportunities upon which to base an opinion regarding the question of cardiac strain such as have fallen to Sir Clifford Allbutt and to Captain Abrahams, it has always appeared to me that an "athletic heart," if it occurs at all, must be so rare as to require to be classed under the heading of medical curiosities rather than of pathological conditions worthy of serious attention Yet during an experience in the post-mortem room covering about 2500 necropsies I met with three instances of great enlargement of the heart which, by excluding all other possible causes of enlargement, appeared with some reason to have been consequent upon prolonged physical exertion But two of those cases occurred in stokers in gasworks, and the third in a blacksmith It is obvious that in those cases strenuous work was carried on under unusual conditions—namely, under the influence of great heat—and the question arises whether the heat may not have been the more important factor in leading to the cardiac enlargement During heavy work in a hot atmosphere most of the water drunk must be passed off by the skin, comparatively little by the kidneys Toxic products of metabolism may be retained and the heart suffer in consequence A good example of toxic enlargement of the heart, it may be mentioned in passing, is the enlargement which is not so very uncommonly met with as a result of excessive indulgence in alcohol, but alcohol as a cause for enlargement in the above cases was as far as possible excluded

However reasonable or unreasonable my theory may be regarding a toxic causation for enlargement of the heart occurring in association with prolonged arduous work, it is a sufficient supply of fluid that I require to enable me to arrive at the end of a long ride feeling capable of doing as much again Captain Abrahams attributes the warding off of fatigue during one of his physical feats to a good meal It seems to me that if the circulation benefits from the solid constituents of a meal taken during exercise it can only do so because the food acts as a mechanical stimulus to the abdominal vaso-motor system, a stimulus which, of necessity, reacts on the general circulation The muscles can derive no direct benefit from the meal until time has allowed digestion to take place whereas the influence of a meal on the sense of well being is almost immediate Some persons may require abdominal stimulation of the vaso-motor system during strenuous exercise, in others fluid taken in sufficient quantity to make up for the loss of water by perspiration may be all that is necessary It is true that in the above mentioned ride I drank two bottles of sweet lemonade and two large cups of café-au lait containing sugar, and thus took a rapidly diffusible food in the form of sugar, but on several occasions during a ride of nearly 1300 miles in Algeria and Tunisia, including a ride from Algiers to Tunis, I frequently had water only in the course of the day, which fortunately could often be procured clear and fresh in the mountainous and hilly districts

In addition to physical conditions affecting the circulation, as Captain Abrahams points out, the mind also has its influence A child may run about all day after butterflies and show no sign of fatigue, but become hopelessly tired after an hour's dull walk The athlete may have an object in view and feel no fatigue until the object is attained This is not the case with the soldier Most of his exercise is undertaken with no other stimulus than that of fulfilling, it may be, dull duty He is at a disadvantage in another way The athlete's feats are more often than not spasmodic. Consciously or subconsciously, should he overstrain in some measure his physical powers he, by a diminution in outlet of energy, allows time for recuperation The soldier is not his own master in such matters and in the absence of sufficient time for recuperation the nervous balance of the vaso motor system may be upset

The athlete will, I think if he study his own circulation for a day or two after some feat in which he had put a strain upon his physical powers, great even for himself, find some departure of the vaso motor system from its usual smooth working This is most likely to take place when strenuous exercise has not previously been undertaken for some time, but it seems to me that slight temporary disturbance of the vaso-motor system may undoubtedly occur The conditions of life of the athlete are such that he suffers no harm The conditions of the soldier may be otherwise

I am, Sir, yours faithfully,

April 2nd, 1917 THEODORE FISHER.

To the Editor of THE LANCET

SIR,—With Captain Adolphe Abrahams s conception of the "soldier s heart,"[1] with his observation of the aggravation of that condition which frequently appears to result from much attention being called to it in cordaria or in general hospitals, and with his experience of the natural disinclination manifested by some who have suffered from it again to "face the music" of outrageous war my own views and experience largely agree The "defensive neurosis" of which he writes is certainly shown by some, although not by all Others are bravely anxious to resume duty and do so and I have found this even among "gunners," whose 'job,' to use a Service term is more arduous than that of some other branches

The psychical and neural factors, as I have before argued play a large part in some cases of *persistent* soldier's heart but a tedious or protracted form of this condition is met with also in the unemotional and stable man who is physically played out and whose nervous system doubtless manifests changes not otherwise expressible at present than by such terms as the loss of reserve force or exhaustion The prospects of even a young and healthy man, who has escaped invalidism and injury and been actively engaged in modern warfare for 18 months or 2 years and who shows the "soldier's heart" (the advent of which, in some cases, is precipitated by a "shell shock"), of again being able to resume full duty are not good Who can say that such a one has not earned relief from work in the fighting line although there is no release in war? He has "done his bit' and may find useful war work elsewhere than on the stricken field

It is, however, to another point in the heart of the soldier, as distinguished from the "soldier's heart," that I wish now briefly to allude, conceiving the point to be of practical importance Captain Abrahams s remarks, if I may without offence say so, have, on the whole, a commendable reserve and balance, but I would respectfully suggest that as an adherent of the new cardiology—the modern aspect of heart disease, to use the phrase of the last Lumleian lecturer—he has revived, in his contempt for the cardiac bruit, a view which, I had hoped, was fast finding a richly deserved quietus The ' purrs," "barks," "roars," and "squeaks" of the heart are not precisely analogous to the various grunts of an efficient motor car In making this comparison Captain Abrahams doubtless is, however, rhetorical rather than instituting that analogy which has been well called the fruitful mother of *many errors*

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[1] THE LANCET March 24th 1917, p 442.

[1] THE LANCET March 24th p 442

Many systolic bruits, transient or extracardial in nature, which are usually easily diagnosed and have frequently been fully appreciated, are, of course, negligible But with all due regard for the value of integrity in muscular power (the importance of which, so far as I know, has for long been recognised even by those who find some wisdom in *old* aspects of heart disease) is it contended, may I inquire, that it is an excellence in the cardiac mechanism to possess a defective valvular apparatus? The new cardiologist, who regards with some complacency his additional enlightenment, would appear at times to think so Is the career of a soldier one to be chosen by those who possess even a mitral lesion which has survived with impunity the calls of civil life and shows when examined no material enlargement or dilatation of the organ? Experience answers, Certainly not Organic valvular disease, direct and reflux, which has been overlooked or ignored, and notwithstanding exceptions to the rule has frequently been found to lead to hopeless invalidism, and at times even to the death of the soldier So well established is this fact that no medical officer, however "modern" his outlook on heart disease would be justified in subjecting the bearer of such a lesion to the exertions and vicissitudes of the soldier's life in war It is to emphasise again this point, on which a considerable experience enables me to speak with conviction that I write these lines Fortunately, the Army Medical Service as a whole, and in spite of "modern" conceptions continues to prefer an entire to a broken pump in the circulation, even when the break is only in the wash leather

I am, Sir, yours faithfully,

ALEXANDER MORISON

Upper Berkeley-street, W April 2nd 1917

THE LUMLEIAN LECTURES ON HEART DISEASE

To the Editor of THE LANCET

SIR,—There is one point in the modern study of heart disease which I think, hardly meets with the recognition that it deserves, and I venture to believe that in the future it will greatly alter the attitude of the medical profession to this study It is this that we can from the most frequent cause of heart disease in this country not only isolate the exciting cause, but reproduce the lesions, and thus the rheumatic heart is proved to be an infective process From the date of this acquisition to our knowledge I hold that much teaching on the subject of heart disease has been entirely altered So far as cardiac infections are concerned, we see at once that there are two phases—running of course, the one into the other—the active phase, in which everything ever to be gained in the way of cure must be sought for and the stage of scar formation, in which palliative measures are only possible. Further, we realise that the study of heart disease is not, as would so often appear to be thought, a study of the heart alone, but a study of the response of the heart to infection correlated with the responses of the other viscera.

It is often enough that the character of the infection, *qua* virulence determines the future of the patient rather than the particular physical signs at the moment To estimate this virulence we must study not the heart alone but the patient The life history of the infection is of more cardiac importance than irregularities of action or valvular lesions Why does the infection, in some cases, linger stubbornly on breaking out at intervals, and producing in this way stenosis? Why do the valvular lesions sometimes fail to heal and thus produce various grades of malignancy? Again, why does the rheumatic infection in some cases damage the nervous mechanism of the heart as in children it does the brain in chorea thus producing intractable cardiac 'neurasthenia'? How much can we influence the development and course of heart disease by more careful attention to angina faucium? What can we do to prevent scar formation by alteration of surroundings and more prolonged convalescence? When are we going to look upon scar formation as a failure in our methods and not as "heart disease" These are problems with which what I venture to call the modern study of heart disease confronts us, these are the problems the solution of which, however imperfect, will lead to the relief of the human race from much affliction Our text-books mostly begin at the end of the story, or perhaps it would be more correct to state that they lavish most of their wisdom on a lost cause There are admittedly very many points in heart disease unassociated with infection, and I have nothing but admiration for the investigations connected with them, but I do claim that the establishment of cardiac infection in rheumatic heart disease is not only modern, but will eventually alter entirely the methods of description of many of the most important developments of heart disease

I am, Sir, yours faithfully,

Devonshire-place, W April 6th, 1917 F JOHN POYNTON

THE EXAMINATION OF THE BLOOD OF TYPHUS FEVER CASES BY DARK-GROUND ILLUMINATION

To the Editor of THE LANCET

SIR,—The infective agent in typhus fever has been a subject of much investigation in recent years In Belfast we have made numerous blood cultures, but have failed to isolate any micro-organism which could be definitely incriminated as the cause of the disease During the past few weeks we have had an opportunity (through the courtesy of Dr Gardner Robb) of examining the blood of typhus fever patients with dark ground illumination. Our investigations are yet far from complete, but the following facts seem worthy of putting on record

1 In all cases examined before the crisis the blood shows a well defined slender body which is about the thickness of the *B typhosus* and like the latter, is of variable length This body is extremely pliable, wriggles, and shows distinct motility In some cases its length is about 4μ, in others 6–8μ, and often a long slender filament about 16μ is seen The clean cut outline and the motility and the characteristic appearance indicate its parasitic character and differentiate it from any artefact Whether it should be classed as a bacillus or spirochæte must be decided by further study The appearance in the dark field is such as is presented by ordinary bacilli but the longer forms are not unlike the straighter forms of the *Spirochæta ictero hæmorrhagica* Against the view that it is a bacillus is the fact that our cultures so far have been completely negative It is remarkable that blood which contains numerous living forms of above description inoculated on all kinds of media both under aerobic and anaerobic conditions shows no growth The micro-organism at each pole shows a highly refractile granule, and its slender pliant body differentiates it from the diphtheroid bacilli described by Plotz and others

2 The micro-organism is free in the plasma If the citrated plasma is centrifrugalised and the deposit examined in the dark field the presence of the germ is readily detected but as a rule there is no difficulty in finding it without this procedure. Since the disease is transmitted by lice it is obvious that the virus must be present even in a small drop of blood

3 The presence of above germs in blood which gives no growth on ordinary media is diagnostic of typhus fever

4 So far we have examined blood from 12 separate cases of very different ages and in all have found the micro-organism The day of the disease at which blood was examined varied from the fifth to fifteenth During convalescence the germ could not be detected in several specimens, though it had been found at the acute stage

In conclusion we may state that a very careful examination of five specimens of normal blood showed no bodies at all resembling the above We used Leitz s dark ground condenser, 1/6 objective lens and 4 ocular, and as a source of illumination Mill's electric arc lamp We need hardly add that slides coverslips &c, were scrupulously clean and sterile In our opinion the micro-organism is closely related to the *Spirochæta ictero-hæmorrhagica* and to the bacillus found by Wolbach in Rocky Mountain fever, and pending further investigation might be described as the *Spirochæta typhi*—We are, Sir, yours faithfully,

W JAMES WILSON,
GEORGINA R DARLING

Hygiene and Public Health Laboratories Queen's
University Belfast April 6th 1917

THE CLOSURE OF COLOTOMY OPENINGS

To the Editor of THE LANCET

SIR —In his letter in your issue of April 7th Mr Lockhart-Mummery still maintains that the enterotome method of closing a colotomy opening is the best He objects to the method of Greig Smith on the ground that—

> "The extraperitoneal operation is very liable to leave a weak place in the abdominal wall, and many patients have subsequently to wear belts It also leaves a condition which is not normal and is liable to cause trouble later"

In his paper in your issue of March 10th, in discussing the enterotome method, he states

> 'The only objection to it is that the condition left is not quite normal, as the bowel remains attached to the abdominal wall, and there is often a weak spot which may necessitate the wearing of a belt or support"

Wherein lies the difference?

I have seen no trouble subsequent to the extraperitoneal operation Mr Lockhart-Mummery condemns the extraperitoneal method as being dead but in doing so condemns his enterotome method He wrote his paper feeling that as surgeon to St Mark s Hospital he should call the attention of the uninitiated to the best method of closing colotomy openings The enterotome method he regards as "the easier and by far the safer" when compared with the resection method He must admit the same for the extraperitoneal method, as from his own statements he has no more objection to it than he has to the enterotome method

His paper was also written to describe "(1) the easiest and (2) the best methods of closing a colotomy" A third object might have been the safest method The statistics given by him show by his methods 14 per cent deaths and 16 6 per cent failures after repeated operations The figures I gave in my letter of March 31st show for the extraperitoneal method 2 6 deaths and no failures I think that even Mr Lockhart Mummery should agree that the extraperitoneal method is the one to be adopted by the less initiated, the resection method being kept for the unusual case and the enterotome put into the museum

A point which has not apparently been made clear is, that there must be adequate clearing of the bowel before the opening is closed If this is done, what can be the object of having the bowels opened on the second day? It will cause undue tension on the sutures There are no masses of hard fæces in the bowel Even if there were hard masses of fæces present due to faulty preparation, then a small enema or small doses of salts will not break them up, The stimulus will only cause them to come into the neighbourhood of the sutures, a condition of things which, I agree with Mr Lockhart-Mummery, is to be avoided at all costs In my opinion, routine opening of the bowel on the second day will cause failure in the closing of colotomy openings

I am Sir, yours faithfully,

ERNEST FINCH, M D, M S Lond F R C S Eng,
Assistant Surgeon Royal Infirmary Sheffield

April 9th 1917

TUBERCULOSIS AND THE WAR

To the Editor of THE LANCET

SIR,—In reply to Dr Edward E Prest's letter in THE LANCET of March 24th as a believer that a good deal of the trouble in the comparison of tuberculous cases is due to the inexact use of terms, I should be glad to know what he means by ' that he may be permanently cured," and how the condition is recognised when it is attained, as after much inquiry I have up to date failed to find a satisfactory description of how it may be achieved and recognised

In connexion with his desire to give five months' treatment in a sanatorium to cases classified as Class I, I may state that I have had two cases sent to my sanatorium this week from the Army which illustrate the point One patient came from India, there was T B bacillus found in the sputum months ago when his condition of health was very low He is now his normal weight, he has no temperature variation (taken rectally) no increase of pulse rate no cough no sputum, desires and is quite capable of working after a short holiday Should I send him to "a properly conducted sanatorium'? The other case was discharged from my sanatorium 20 months ago, apparently all active symptoms having subsided and in excellent health He has now been returned from France after 12 months' service, 1 stone heavier than when he left, with no cough, no sputum, no increase in pulse rate, and no variation of temperature He is much amused at his success in getting his discharge and pension He is a very efficient "*swinger of the lead*," as I know from experience, and he will remain in the sanatorium as long as we are willing to keep him and would thoroughly enjoy "five months' treatment"

I fully believe in sending Class I cases into a sanatorium if they show any loss of resistance during dispensary attendance, in fact very few others are admitted here except soldiers' dependents or cases forwarded by the War Office, but from watching a considerable number of cases (about 2000) I am satisfied that there is a stage anterior to that requiring the complete cessation of wage earning, which the sanatorium treatment necessitates Any threat to their resistance by the tubercle organism can be countered without turning them into invalids, even temporarily This stage takes a certain amount of care in recognising, and is generally classified as incipient phthisis When a sanatorium is indicated the lesion has usually become more definite and permanent tissue destruction has occurred as is demonstrated by the physical signs of the grosser nature easily recognised by the ordinary stethoscope

More than 50 per cent of the cases that have been passed through the sanatorium here in the last two years are in full work, many for a considerable time without deterioration. Still I should hesitate to describe them "as permanently cured," and it is considered advisable that they should still attend the dispensary occasionally for observation and advice

I am Sir, yours faithfully,

Middlesbrough April 4th 1917 HENRY A ELLIS

READING BY EAR

To the Editor of THE LANCET

SIR —Will you permit me to point out that the article in the *Times* of March 29th describing a recent trial of the optophone was of a somewhat misleading character On Jan 25th Dr d'Albe undertook to give a demonstration of the practical value of the optophone before some experts of the National Institute for the Blind, this demonstration to consist of the reading of newspaper type at the rate of 25 words a minute It was deferred until Dr d Albe had practised to a degree which he considered sufficient on the instrument to be employed Dr d Albe selected March 26th as the date, and I have it from him that he had practised 130 hours on the optophone used

As to how far short he fell of his expectations the following extract from a report submitted to me by the four experts of the National Institute for the Blind who attended the demonstration, and two of whom were blind men, will show

> The speed which the inventor was able to attain—one word in one minute and a quarter—would be utterly useless Dr d'Albe's contention that increased speed was purely a question of practice is not convincing, for our knowledge of the optophone leads us to believe that the speed must always be so slow and the use of the instrument so nerve-racking as to make the optophone of little or no value to blind people, whatever may be its use in other directions But even assuming that a satisfactory speed could be obtained, the expensive character of the instrument would put it out of the reach of the average blind person

I hope that Dr d Albe will now cease to issue misleading statements with regard to the practical value of the optophone as a means of enabling blind people to read It can at present be only described as an interesting scientific toy It is to be most sincerely hoped that Dr d Albe will in the course of time succeed in producing results from his ingenious invention which will render it worthy of serious consideration by those who have the interests of the blind at heart

I am, Sir, yours faithfully,

ARTHUR PEARSON
President, National Institute for the Blind

Great Portland street, London W April 2nd 1917

⁂ We noted on Feb 17th Dr d'Albe's demonstration of the optophone at the Röntgen Ray Society and his claim that with practice printed type could be read at the rate of several words a minute This claim he appears to have failed to establish —ED L

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Wounded

Major J S Jenkins Canadian A.M C
Capt A. Peden, R A.M.C
Capt P R. Bolus, R A.M C
Capt J G Greenfield, R.A.M C , attached Cameronians
Capt G F Hardy, M C , R A M.C attached Royal Garrison Artillery
Capt J Hardie, Australian A.M.C
Capt F R Sturridge, R.A M.C , attached Royal Sussex Regiment
Capt. J A. R Wells R.A.M C attached Lancashire Fusiliers
Capt V E Badcock R.A.M.C , attached Highland Light Infantry
Capt C H. Fischel R A M C , attached Royal Field Artillery
Capt R P Rosser R A.M.C
Capt A. A. Rutherford, R A.M C

Missing

Capt S J Linzell, R A.M C

DEATHS AMONG THE SONS OF MEDICAL MEN

The following sons of medical men must be added to our lists of those who have fallen during the war —

Second Lieut R B W Gosse, Cheshire Regiment attached Royal Warwick Regiment second son of Dr H. W Gosse, of Eccleshall Staffs

Lieut F C Woods Royal West Surrey Regiment, younger son of the late Surgeon Major Woods, A.M S

MENTIONED FOR WAR SERVICES

The name of the following medical officers are to be added to the list given in THE LANCET of March 3rd p 353 —

Temp Col. J Atkins C M G A.M.S Temp Capt W T Finlayson R.A.M C Surg Lt Col. and Hon. Surg -Col D Hepburn R.A.M C Major (temp. Lt Col) G S Mansfield Reserve of Officers R.A.M C Temp Capt C R Stewart R A.M.C Temp Major R H Swan R.A.M C Major and Bt Lt -Col. C R Sylvester Bradley R.A M C Temp Capt D J Thomas R.A.M C Lt. Col. F H. Westmacott R.A.M.C

The following corrections in the list given in THE LANCET of March 3rd are announced —

For Lt -Col J Battersby read Lt Col H. L. Battersby for Maj E Grey read Maj E Gray for Maj J H H. Pirie read Maj W H. Pirie for Davies, Temp Capt. F J P., read Daly Temp Capt F J P

THE CENTRAL MEDICAL WAR COMMITTEE THE SUPPLY OF MEDICAL OFFICERS FOR THE ARMY

At a meeting of the Central Medical War Committee, held on Wednesday April 11th a report by the Assessment Subcommittee was read showing how it was proposed to meet the demands of the War Office for further medical officers

The report stated the position was as follows—that of the number of medical officers required by the War Office by May 31st some 250 men were still wanting and that as the first step towards making up this deficit it had been decided to include in a further call men between 41 and 45, men passed for home service only and men who having served with the Army have returned to civil practice for not less than one year this being in addition to any men under 41 who could still be spared from the districts in which they practised

The Assessment Subcommittee proceeded by dividing all the material possibly available into three groups—namely areas which cannot under existing circumstances supply more medical men, areas in which it is not possible to say that this disability definitely exists, and lastly, areas on which a call can be made immediately Under this third group were included those areas and sub-areas in which more medical men are now available by an increase in their number since the last call was made or by the raising of the age limit Having made careful analysis of the sources of supply in minute detail the Assessment Subcommittee in the report considered that the new call which it proposed would make good the estimated deficit in the number of medical officers demanded by the War Office by May 31st

The report of the Subcommittee, after debate, was approved in a resolution of the following terms —

1 That the Committee approves the report of the Assessment Subcommittee as to the prospects of meeting the requirements of the War Office for May 31st, and authorises calls to be made forthwith in accordance therewith 2 That on the facts ascertained from the critical review now made of the remaining provision for the civil community the Committee records its opinion that no further substantial reduction in the number of doctors in civil practice can be effected without such public dissatisfaction as, in the opinion of the Committee, should not be occasioned on its sole responsibility, it therefore deems it its duty to place the position before the Government through the departments with which it is chiefly brought into relation—namely, the War Office, the Local Government Board, and the Insurance Commission

At a recent meeting of the Executive Committee of the Wandsworth Division of the British Medical Association, a resolution was unanimously carried protesting against any measure of compulsion being applied to the medical profession which is not at the same time applicable to the whole community

THE MEDICAL SERVICE OF THE UNITED STATES NAVY

America's momentous decision to take a part in the war gives special interest to an illustrated article dealing with the United States Naval Medical Service which appeared in the *New York Medical Journal* of March 17th Before the passing of the Act of August 29th, 1916 which provided for a large increase in the personnel the Medical Corps of the United States Navy consisted of 345 medical officers The full complement is now 683 and there are stated to be about 300 vacancies The limits of age for appointment are 21 to 32 years, and, as in our own naval service, candidates have to pass both a physical and a professional examination No candidate is accepted unless his physical condition warrants an expectation of active service until the retiring age of 64 years when he receives two-thirds of the pay of his grade The professional examination is divided into two parts the first being for enrolment in the Naval Reserve Force. If successful the candidate attends a course of instruction at the Naval Medical School on full pay and allowances, upon the completion of which he takes the final examination for appointment in the Medical Corps of the Navy The pay of an assistant surgeon on shore duty is $2000 per annum with quarters, or, when quarters are not supplied by the Government, an additional allowance for quarters amounting to $432. At sea the assistant surgeon receives $2200, his quarters and attendance being furnished him aboard his ship Every five years the pay of an officer increases by 10 per cent , although the increment cannot exceed 40 per cent , calculated on the annual base pay of his grade. The pay of a medical director with the rank of captain is thus limited to $5000 that of a medical inspector with the rank of commander to $4500 and that of surgeon with the rank of lieutenant commander to $4000 The pay of a medical director with the rank of a rear admiral is $6000 for the lower half and $8000 for the upper half of those in that grade

In addition to the regular Naval Corps there is a medical division of the Naval Reserve Force which requires 500 surgeons, membership being open to all medical men under 44 years of age who are American citizens A member receives two months' retaining pay for every year of his enrolment in addition to service pay for any term of actual service which he may give the pay corresponding to that for similar ranks in the Navy Members who re-enrol for four years, subject to certain conditions, receive an increase of 25 per cent of their base retaining pay After 20 years service an officer may be retired on his own application with a cash credit equal in amount to his retaining pay during the last term of enrolment In order to meet the need for rapidly training reserve officers in the duties of medical recruiting during mobilisation a correspondence course has been established at the Naval Medical School, Washington D C

MEDICAL ARRANGEMENTS IN VOLUNTEER BATTALIONS.—A question addressed to the Under Secretary of State for War last week in the House of Commons elicited the fact that the appointment of medical officers to volunteer battalions has been sanctioned by the War Office. It has not yet proved possible to proceed with the formation of volunteer field ambulances, owing to changes of organisation consequent on the passage of the Volunteer Act Proposals were, however, under consideration, and Mr Macpherson hoped that the matter would shortly be settled

The Army Doctor's Risks —In the House of Lords last week, when the Military Service (Review of Exceptions) Bill was read a third time and passed, Lord Derby said it was impossible to set up medical appeal boards all over the country, as was asked for in the House of Commons, because there were not sufficient doctors to do the work. Some people, he said, thought that the work of the Royal Army Medical Corps was free from danger, but, as a matter of fact the Army lost more than 400 doctors killed and wounded in the Somme battle alone At the present moment, he added, the Army was not critically, but certainly lamentably, short of doctors

Medical News.

Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England —At the Second Professional Examination of the Conjoint Board in Anatomy and Physiology, held on March 28th and 29th and April 2nd, 52 candidates presented themselves, of whom 30 were approved and 22 were rejected The following are the names of the successful candidates —

Hussein Amin, Cairo and Guy's Hospital Henry Edwards Archer St Bartholomew's Hospital; Arthur Beadblock University College; Benjamin Faltas Behman, Assiut and King's College Anna Bridget Broman London School of Medicine for Women Harold Mallows Brown Guy's Hospital Marjorie Carnsew Chappel London School of Medicine for Women; Alice Maud Mary Clegg, Liverpool University Saul Cohen Guy's Hospital Redgewell George Dansie, King's College Thomas Draper Edinburgh Henry Dryerre Royal Colleges Edinburgh; Abdel Hamid El Rakshi, Cairo and King's College; Edwin Spencer Etheridge University College Gerald Hartas FitzGerald, Guy's Hospital; Herman Meyer Gerson London Hospital Wahba Girgis, St Mary's Hospital Harry Cunliffe Hopkinson Cambridge and Manchester Universities and Middlesex Hospital; Aga Mohamed Kazim Bombay University and Madras Medical College Henry David Kelf St. Bartholomew's Hospital Frederick Charles Lewis Liverpool University; Edgar Duncan Macmillan St Bartholomew's Hospital Syed Francis Mahmood Cardiff and St Bartholomew's Hospital; Anna Miller London School of Medicine for Women George Geoffrey Newman London Hospital Arthur Samuel Pearson, Birmingham University; Guy Kingham Reeves, Guy's Hospital Benn Roland Reynolds University College Cardiff and Gerald Maurice Joseph Slot and William Gilbert Desmond Harold Urwick St Bartholomew's Hospital

University of London —At examinations for internal and external students held recently the following candidates were successful —

Second Examination for Medical Degrees Part I

Dulcie Stapleton Adkins and Doris Elizabeth Alcock, London School of Medicine for Women; Christopher Howard Andrewes St. Bartholomew's Hospital; Marjorie Henrietta S Auden Frances Sophia Barry, and Geraldine Mary Barry London School of Medicine for Women Davis Evan Bedford, Middlesex Hospital; Percy Croad Brett, St Mary's Hospital; John Laird McKenzie Brown, St. Bartholomew's Hospital Margaret Minna Brownstone London, School of Medicine for Women *Maurice Danks Cadman St. Thomas's Hospital; Frederick Cecil Wray Capps St Bartholomew's Hospital Joan Katherine Somerville Cave London School of Medicine for Women George William Chester King's College Anaple Frances Mary Christie, London School of Medicine for Women, John Joseph Coghlan, London Hospital Joseph Alfred Cohen King's College Julius Cohen St. Mary's Hospital Henry Nathan Warner Collins, King's College; Nancy Macnaughton Coutts Elsie Eleanor Cowperthwaite and Barbara Cubitt London School of Medicine for Women; Godfried Leon Jozef A. De Rynck University College Edith Monica Down London School of Medicine for Women Nicholas Bernard Dreyer Guy's Hospital Archibald Glen Duncan London Hospital; Edith Marian Evans and Ada Marion Freeman London School of Medicine for Women Arthur John Gardham University College Janet Katharine Gatty and Madeline Giles, London School of Medicine for Women; Humphrey Hart Gleave, University of Leeds Kate Glyn-Jones London School of Medicine for Women Brian Wilson Barnett Gordon St. Mary's Hospital, Eleanor Graham, London School of Medicine for Women Nellie Gray King's College; Katharine May Harbord and Gertrude Eleanor Harre London School of Medicine for Women Martin Curgenven Hartley, London Hospital, Majorie Christina Hawkins University College Cardiff; Hilda May Haythornthwaite and Phyllis Mary Horton London School of Medicine for Women; Margaret Olwen Howell University College Cardiff; Margery Kathleen Illingworth and Doris Eleanor Parker Jolly London School of Medicine for Women David John Jones and Dilys Menai Jones University College, Cardiff Dorothy Maud Kemp and Kathleen Helena Beatrice King, London School of Medicine for Women; William Edward Kappel Kirby University College; *Joseph Victor Landau St. Bartholomew's Hospital Geraldine Zarita Lee Le Bas Bedford College; Margaret Longbottom London School of Medicine for Women; Rupert Alexander Madgwick, London Hospital Montague Maizels, University College Iva Clare Marion Molony and Eva Joyce Newton London School of Medicine for Women; Bertram Sydney Nissé London Hospital Sybil Mary Nuttall Helen O Brien, and Alice Owen, London School of Medicine for Women Charles Frederic Parry Rupert John Parry and Thomas Parry University College, Cardiff Louise Olivia Paterson and Winifred Peacey London School of Medicine for Women Norman August Marais London Hospital Phœbe Myfanwy Phillips Evelyn Violet Pilley Tressilla Laura Pires Alice Dorothy Pocock and Cassie Ethel Pratt, London School of Medicine for Women Charles Arnold Probert, private study; Louise Agnes Proctor and Hilda Winifred Richards London School of Medicine for Women Philip Lawrence Richardson, Guy's Hospital Isabella McDougall Robertson, London School of Medicine for Women William George Rose, St. Mary's Hospital May Kathleen Ruddy and Maud Sanderson London School of Medicine for Women John St Clair Shadwell Guy's Hospital; Abraham Isaac Silverman Middlesex Hospital Elfrida Elizabeth Ada Spencer B.A London School of Medicine for Women Harold Edwin Thomas University College Frederick Henry Wickham Tozer and Mark Tree, London Hospital Doris Lyne Veale, Norah Walden Gladys May Watkinson Agnes Edie Westwood, Agnes Sidney Wilkins, and Ada Kathleen Williams London School of Medicine for Women; Samson Wright Middlesex Hospital Jacob Elias Zeitlin London Hospital Michael Israel Zimmerman King's College

* Awarded a mark of distinction

N B —This list, published for the convenience of candidates is issued subject to its approval by the Senate

University of Durham Faculty of Medicine —At the Convocation held on March 31st the following degrees were conferred —

Doctor of Medicine —Idris David Evans and Robert Peart

Bachelor of Medicine (M B) —Norman Braithwaite Ernest Bramley Richard Vere Brew Stephanie Patricia Laline Hunte Taylour Daniel Donald Henegan James Dixon Johnson John Kerr Ritchie Landells, Kamel Ibrahim Shalaby Charles Rees Smith and Iskander Soliman

Bachelor of Surgery (B S) —Norman Braithwaite Ernest Bramley Richard Vere Brew Horace George Bennett Dove Donald Henegan John Kerr Ritchie Landells, Kamel Ibrahim Shalaby and Charles Rees Smith

The following received the Diploma in Public Health (D P H) —

Richard Julius Cyriax and Douglas Catterall Leyland Orton

The following received the Licence in Dental Surgery (L D S) —

Wilfred Phillipson Spence

Through a decision of their Joint Matriculation Board the Universities of Manchester, Liverpool, Leeds, Sheffield, and Birmingham have now come into line with other examining bodies in not requiring that Latin should be taken as an obligatory subject in the entrance examination to the Faculty of Medicine

Royal College of Physicians of London —An extraordinary Comitia of the College was held on April 2nd Dr Frederick Taylor, the President, occupied the chair and delivered the presidential address, in the course of which he first mentioned the changes in the College list, among them that the College had lost by death during the year 6 Fellows, 8 Members, 1 Extra licentiate and 195 Licentiates Among the 8 Members was the senior Member, Dr Horace B Dobell, who founded the lecture which bears his name A long and interesting list of honours, military and civil, conferred upon Fellows, Members, and Licentiates of the College was then read out, after which the lectures delivered during the past year were mentioned—namely, the Harveian Oration, by Sir Thomas Barlow, the Bradshaw Lecture, by Dr H W G Mackenzie, the FitzPatrick Lectures, by Dr W H R Rivers, the Horace Dobell Lecture, by Dr H R Dean, the Lumleian Lectures, by Dr G A Sutherland, the Goulstonian Lectures, by Dr C H Miller, and the Oliver Sharpey Lecture, by Dr C Bolton The medals and scholarships awarded were next referred to, the fact that there were no candidates for the Murchison scholarship being announced After reviewing the principal matters which had come before the President, the Comitia, and the various boards and committees the President read obituary notices of the six Fellows who had died during the year—namely, Sir Lauder Brunton, Bart, Dr William Orange, C B, Dr Duncan Burgess, Dr W W H Tate, Dr William Cayley and Sir James F Goodhart Bart A ballot was taken for the office of President, and Dr Taylor was re-elected After some formal business the Comitia was dissolved

Royal Institute of Public Health —A second course of lectures and discussions on Public Health Problems under War and After war Conditions" will be held in the lecture hall of the Institute on Wednesdays from April 18th to July 25th inclusive, at 4 P M The lectures range over a large area of immediately pressing topics, each of which is to be dealt with by an acknowledged expert, and discussion will follow the delivery of the lecture Medical officers of health, medical practitioners, sanitarians, and others engaged in public health work are invited to attend A syllabus of the course may be obtained on application to the secretary, 37, Russell square, London, W C 1

METROPOLITAN ASYLUMS BOARD DIPLOMA IN PUBLIC HEALTH —A course of lectures and demonstrations (lasting three months), in hospital administration will be given at the North Western Hospital, Lawn road, Hampstead, London, N W, by Dr J E. Beggs, medical superintendent, on Tuesdays and Fridays at 5 P M, beginning Tuesday, May 8th The fee for the course is £3 3s, and further particulars may be obtained from the Clerk to the Metropolitan Asylums Board, Embankment, London, E C 4

INSTITUTE OF HYGIENE —The Principal of the Institute, Mr J. Grant Ramsay, delivered on March 29th a lecture on "*The Problem of Food, Fitness and National Resources*" Proper feeding was, he said, the foundation of fitness He had come across strong healthy people in the worst slums of Europe, but always found that they were well fed, he had never met or heard of healthy people even living in the best surroundings, who were badly fed. Proper feeding, however, did not necessarily mean high feeding or large feeding, it meant eating the right foods, in the right quantity, at the right time, and in the right way Halliburton had advocated the eating of rather more than was actually essential, while Chittenden believed we were healthier with rather less than the accepted standard. Nature was very accommodating, and there was much to be said for both theories, but we had followed Halliburton so long that we could now afford to give Chittenden a chance. Those who could afford to do so should continue to buy the best foods and the best parts, leaving the food of the poor as far as possible to the poor, who were more influenced by habit, and would continue to buy what they had been accustomed to

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week, such information for gratuitous publication.*

BENNETT JAMES, M.R.C.S L.R.C.P Lond D P H has been appointed Medical Officer of Health to the Runcorn Rural District Council

CLARKE, A. E, M.D Lond Certifying Surgeon under the Factory and Workshop Acts for Rickmansworth

MACKENZIE, J J R M B Ch B Edin Certifying Surgeon under the Factory and Workshop Acts for Wansford Northampton

MOGG J A H L R C P & S Edin L F P S Glasg Certifying Surgeon under the Factory and Workshop Acts for Woodstock.

NAISH LUCY M B Lond Lady Tutor in Anatomy vice Dr Sophia Witts resigned, in the University of Sheffield

OUTRED C. D. M.R.C.S. L R C P Lond Certifying Surgeon under the Factory and Workshop Acts for Gravesend District.

ROSS, H Certifying Surgeon under the Factory Act for the City of London vice R S. Mair

SELLERS W H, I M B C M Edin M.R.C S to be one of the Medical Referees under the Workmen s Compensation Act 1906, for County Court Circuit No 4

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

BARROW IN FURNESS NORTH LONSDALE HOSPITAL.—House Surgeon Salary £250 per annum, with board, &c

BATH EASTERN DISPENSARY —Resident Medical Officer Salary £140 per annum with furnished rooms, &c.

BODMIN CORNWALL COUNTY ASYLUM —Female Junior Assistant Medical Officer Salary £200 per annum with board, &c

BOLTON INFIRMARY AND DISPENSARY —Second House Surgeon Salary £200 per annum, with board, &c

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Surgeon. Salary £150 per annum with board &c.

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum with board &c.

BURNLEY VICTORIA HOSPITAL.—House Surgeon Salary £160 per annum with board &c.

BURY INFIRMARY —Junior House Surgeon. Salary £150 per annum with board &c.

CHARING CROSS HOSPITAL, Agar street W C —House Physician and House Surgeon. Salaries £100 per annum with board &c

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—House Surgeon Salary £200 per annum with board &c.

CHICHESTER, ROYAL WEST SUSSEX HOSPITAL.—House Surgeon Salary at rate of £150 and War Bonus at rate of £50 per annum with board &c.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway road N —Resident Medical Officer Salary £200 per annum with board &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST Brompton —House Physician for six months. Salary 30 guineas.

HUDDERSFIELD STORTHES HALL ASYLUM Kirkburton near Huddersfield —Locum Tenens Salary £7 7s per week with board &c.

LEEDS PUBLIC DISPENSARY —Second Female Resident Medical Officer Salary £200 per annum with board &c.

LIVERPOOL BROWNLOW HILL INSTITUTION —Resident Assistant Medical Officer Salary at rate of £350 per annum with rations &c

LONDON TEMPERANCE HOSPITAL, Hampstead road, N W 1 —Temporary Anæsthetist Salary 25 guineas per annum

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon Salary £125 per annum with board &c

MANCHESTER, ANCOATS HOSPITAL.—House Physician Salary £150 per annum with board, &c.

MANCHESTER COUNTY ASYLUM Prestwich —Locum Tenens Salary £7 7s per week with board, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN Park place, Cheetham Hill road.—House Surgeon Salary £150 per annum with board &c

NETLEY WELSH HOSPITAL.—Medical Officer for Pathological Department Salary £400 per annum with board, &c

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon Salary £150 per annum, with board &c

NOTTINGHAM NOTTS EDUCATION COMMITTEE —Female Assistant School Medical Officer Salary £300 per annum.

QUEEN MARY S HOSPITAL FOR THE EAST END, Stratford.—House Surgeon

QUEEN'S HOSPITAL FOR CHILDREN Hackney road Bethnal Green E —House Physician Casualty House Surgeon and House Surgeon for six months Salary £100 per annum, with board &c.

READING ROYAL BERKSHIRE HOSPITAL.—Resident Clinical Assistant for six months Salary £150 with board &c

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary £150 per annum with board &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND —Examiners

ST PETER S HOSPITAL FOR STONE ETC. Henrietta street Covent Garden W C.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, &c. Also Junior Anæsthetist.

SERBIAN RELIEF FUND 5 Cromwell road London, S W 7 —Medecin Chef to Hospital on Salonica Front.

SHEFFIELD ROYAL INFIRMARY —House Physician. Salary £120 per annum with board &c.

SHREWSBURY SHIRLETT SANATORIUM Shropshire.—Temporary Assistant Resident Medical Superintendent Salary £300 per annum

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon Salary £120 per annum with board &c.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY —Resident House Surgeon Salary £150 per annum with board &c

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—Female Assistant Resident Medical Officer Salary £250 per annum, with board &c

THE Chief Inspector of Factories, Home Office London S W gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Brynamman and Bishop s Waltham

Births, Marriages, and Deaths.

BIRTHS

DOBRASHIAN —On April 6th at Oakley-square N W the wife of Lieutenant G Rowland Dobrashian, R A M C of a son

HALLOWS —On April 5th at Gloucester-gate Regent's Park Mary wife of Captain Norman F Hallows R A.M C., of a son

KIDD —On April 4th at Harley street, London the wife of Frank Kidd, F R C S, of a son.

PENNELL.—On April 2nd at Winchmore Hill, N the wife of Vernon Pennell M A. M B., B C Cantab —a son

PINSON — On April 5th at Stockport-road Cheadle, the wife of K. B Pinson M.B. M.R C S of a daughter

PRINGLE.—On March 30th at Glaslyn Crescent road Ipswich Jessie Eva (*née* Hart) M B B S. the wife of Arthur Young Pringle M R C S., L.R C P of a son

RAINEY —At Wakefield House Eastbourne the wife of Captain E. H Rainey R A M C of a daughter

WEBB — On April 4th at Grosvenor-square Southampton the wife of Captain G Harvey D Webb, R.A.M C of a son.

MARRIAGES

CARDEW—GRAEME MARSHALL.—On April 4th at the Parish Church Cheltenham Arthur Barrett-Cardew, M C F.R C S R A.M C of Overbury, Charlton Kings to Nora Graeme Marshall second daughter of the late James Marshall, of Hillhead Glasgow

FRASER—MELLOR.—On March 27th at the Parish Church Ashton under-Lyne Thomas Lochhead Fraser Captain, R A.M.C. to Dorothy Walton only child of the late Mr A. E Mellor, J P, of Springfield View Ashton under-Lyne

KERBY—LEMAN —On April 5th, at St. Mary s Strand by the Rev Harcourt Hillersdon, Surgeon T R F Kerby R.N., to Lilian, only daughter of D Jackson Leman of Westbourne-terrace W

MORGAN—REED —On March 30th at Valparaiso, H Lewis Morgan F.R C.S to Minnie, daughter of Mr and Mrs Wm Reed Stockton on-Tees

PEARSE—WILBURN —On March 30th at St. Saviour s Church Colgate Captain Robin Pearse F R.C.S., C.A.M C of Toronto, to Amy Christine eldest daughter of Mr and Mrs E J Wilburn, The Croft Southwick

DEATHS

BARKER —On April 5th Henry Martyn Barker M.D of " Staincliff " Sandown Isle of Wight.

BOULT —On Palm Sunday at St. Margaret s-terrace, St. Leonard s-on Sea, Edmund Farrington Boult, Surgeon Major R A.M C (retired) eldest son of the late Edmund Boult F R C S, of Bath

JOY —On April 1st at the Manor House Tamworth Staffs, Charles H Joy M D aged 46 years

MARR —On Feb. 19th at Bhusawal India, of enteric James Marr M B C M District Surgeon G I P Railway aged 47 years

POTTER.—On April 6th suddenly Henry Percy Potter M.D F R.C.S for 37 years Medical Superintendent of Kensington Infirmary in his 63rd year

N B —A fee of 5s. is charged for the insertion of Notices of Births Marriages and Deaths of volunteer field ambulances, owing to changes of organisation consequent on the passage of the Volunteer Act Proposals were, however, under consideration, and Mr Macpherson hoped that the matter would shortly be settled

The Army Doctor's Risks —In the House of Lords last week, when the Military Service (Review of Exceptions) Bill was read a third time and passed, Lord Derby said it was impossible to set up medical appeal boards all over the country, as was asked for in the House of Commons, because there were not sufficient doctors to do the work. Some people, he said, thought that the work of the Royal Army Medical Corps was free from danger, but, as a matter of fact the Army lost more than 400 doctors killed and wounded in the Somme battle alone At the present moment, he added, the Army was not critically, but certainly lamentably, short of doctors

Medical News.

Examining Board in England by the Royal Colleges of Physicians of London and Surgeons of England —At the Second Professional Examination of the Conjoint Board in Anatomy and Physiology, held on March 28th and 29th and April 2nd, 52 candidates presented themselves, of whom 30 were approved and 22 were rejected The following are the names of the successful candidates —

Hussein Amin, Cairo and Guy's Hospital Henry Edwards Archer St Bartholomew's Hospital; Arthur Beadblock University College Benjamin Faltas Behman, Assiut and King's College Anna Bridget Broman London School of Medicine for Women Harold Mallows Brown Guy's Hospital; Marjorie Carnsew Chappel London School of Medicine for Women Alice Maud Mary Clegg, Liverpool University Saul Cohen Guy's Hospital Redgewell George Dansie King's College Thomas Draper Edinburgh; *Henry Dryerre, Royal Colleges Edinburgh* Abdel Hamid El Rakahi Cairo and King's College Edwin Spencer Etheridge University College Gerald Hartas FitzGerald, Guy's Hospital Herman Meyer Gerson, London Hospital Wahba Girgis, *St. Mary's Hospital Harry Cunliffe Hopkinson Cambridge and* Manchester Universities and Middlesex Hospital Aga Mohamed Kazim, Bombay University and Madras Medical College Henry David Kelf St Bartholomew's Hospital; Frederick Charles Lewis *Liverpool University Edgar Duncan Macmillan*, St Bartholomew's Hospital Syed Francis Mahmood Cardiff and St Bartholomew's Hospital Anna Miller, London School of Medicine for Women; George Geoffrey Newman London Hospital Arthur Samuel *Pearson Birmingham University; Guy Kingham Reeves Guy's* Hospital Benn Roland Reynolds University College, Cardiff and Gerald Maurice Joseph Slot and William Gilbert Desmond Harold Urwick St Bartholomew's Hospital

University of London —At examinations for internal and external students held recently the following candidates were successful —

Second Examination for Medical Degrees, Part I

Dulcie Stapleton Adkins and Doris Elizabeth Alcock London School of Medicine for Women; Christopher Howard Andrewes St. Bartholomew's Hospital Marjorie Henrietta S Auden Frances Sophia Barry, and Geraldine Mary Barry London School of Medicine for Women Davis Evan Bedford, Middlesex Hospital; Percy Croad Brett, St Mary's Hospital John Laird McKenzie Brown St Bartholomew's Hospital Margaret Minna Brownstone London, School of Medicine for Women *Maurice Danks Cadman St. Thomas's Hospital Frederick Cecil Wray Capps St Bartholomew's Hospital Joan Katherine Somerville Cave, London School of Medicine for Women George William Chester King's College Anaple Frances Mary Christie London School of Medicine for Women; John Joseph Coghlan London Hospital Joseph Alfred Cohen King's College Julius Cohen St. Mary's Hospital Henry Nathan Warner Collins King's College Nancy Macnaughton Coutts Elsie Eleanor Cowperthwaite and Barbara Cubitt, London School of Medicine for Women Godfried Leon Jozef A De Rynck University College Edith Monica Down London School of Medicine for Women Nicholas Bernard Dreyer Guy's Hospital; Archibald Glen Duncan London Hospital; Edith Marian Evans and Ada Marion Freeman London School of Medicine for Women Arthur John Gardham University College; Janet Katharine Gatty and Madeline Giles London School of Medicine for Women Humphrey Hart Gleave University of Leeds Kate Glyn Jones London School of Medicine for Women Brian Wilson Barnett Gordon St Mary's Hospital Eleanor Graham London School of Medicine for Women Nellie Gray King's College; Katharine May Harbord and Gertrude Eleanor Harre London School of Medicine for Women Martin Curgenven Hartley London Hospital Majorie Christina Hawkins University College Cardiff Hilda May Haythornthwaite and Phyllis Mary Horton London School of Medicine for Women Margaret Olwen Howell, University College Cardiff Margery Kathleen Illingworth and Doris Eleanor Parker Jolly, London School of Medicine for Women David John Jones and Dilys Menai Jones University College, Cardiff Dorothy Maud Kemp and Kathleen Helena Beatrice King London School of Medicine for Women; William Edward Kappel Kirby University College *Joseph Victor Landau St Bartholomew's Hospital Geraldine Zarita Lee Le Bas Bedford College; Margaret Longbottom London School of Medicine for Women Rupert Alexander Madgwick London Hospital Montague Maizels, University College Iva Clare Marion Molony and Eva Joyce Newton, London School of Medicine for Women Bertram Sydney Nissé London Hospital Sybil Mary Nuttall Helen O'Brien, and *Alice Owen London School of* Medicine for Women Charles Frederic Parry Rupert John Parry and Thomas Parry University College, Cardiff; Louise Olivia Paterson and Winifred Peacey London School of Medicine for Women Norman August Marais, London Hospital Phœbe Myfanwy Phillips Evelyn Violet Pilley Tressilia Laura Pires, Alice Dorothy Pocock and Cassie Ethel Pratt, London School of Medicine for Women Charles Arnold Probert private study; Louise Agnes Proctor and *Hilda Winifred Richards*, London School of Medicine for Women Philip Lawrence Richardson Guy's Hospital Isabella McDougall Robertson London School of Medicine for Women; William George Rose St. Mary's Hospital May Kathleen Ruddy and Maud Sanderson London School of Medicine for Women John St Clair Shadwell, Guy's Hospital Abraham Isaac Silverman, Middlesex Hospital Elfrida Elizabeth Ada Spencer B.A. London School of Medicine for Women Harold Edwin Thomas University College Frederick Henry Wickham Tozer and Mark Tree, London Hospital Doris Lyne Veale, Norah Walden Gladys May Watkinson Agnes Edie Westwood, Agnes Sidney Wilkins, and Ada Kathleen Williams London School of Medicine for Women Samson Wright Middlesex Hospital; Jacob Elias Zeitlin London Hospital Michael Israel Zimmerman, King's College

* Awarded a mark of distinction

N B —This list published for the convenience of candidates is issued subject to its approval by the Senate

University of Durham Faculty of Medicine —At the Convocation held on March 31st the following degrees were conferred —

Doctor of Medicine —Idris David Evans and Robert Peart.

Bachelor of Medicine (M B) —Norman Braithwaite, Ernest Bramley Richard Vere Brew Stephanie Patricia Laline Hunte Taylour Daniel Donald Henegan James Dixon Johnson, John Kerr Ritchie Landells Kamel Ibrahim Shalaby Charles Rees Smith, and Iskander Soliman

Bachelor of Surgery (B S) —Norman Braithwaite Ernest Bramley Richard Vere Brew Horace George Bennett Dove Donald Henegan John Kerr Ritchie Landells Kamel Ibrahim Shalaby and Charles Rees Smith

The following received the Diploma in Public Health (D P H) —

Richard Julius Cyriax and Douglas Catterall Leyland Orton

The following received the Licence in Dental Surgery (L D S) —

Wilfred Phillipson Spence

Through a decision of their Joint Matriculation Board the Universities of Manchester, Liverpool, Leeds, Sheffield, and Birmingham have now come into line with other examining bodies in not requiring that Latin should be taken as an obligatory subject in the entrance examination to the Faculty of Medicine

Royal College of Physicians of London —An extraordinary Comitia of the College was held on April 2nd Dr Frederick Taylor, the President, occupied the chair and delivered the presidential address, in the course of which he first mentioned the changes in the College list, among them that the College had lost by death during the year 6 Fellows, 8 Members, 1 Extra-licentiate, and 195 Licentiates Among the 8 Members was the senior Member, Dr Horace B Dobell, who founded the lecture which bears his name A long and interesting list of honours, military and civil, conferred upon Fellows, Members, and Licentiates of the College was then read out, after which the lectures delivered during the past year were mentioned—namely, the Harveian Oration, by Sir Thomas Barlow, the Bradshaw Lecture, by Dr H W G Mackenzie, the FitzPatrick Lectures, by Dr W H. R Rivers, the Horace Dobell Lecture, by Dr H R Dean, the Lumleian Lectures, by Dr G A. Sutherland, the Goulstonian Lectures, by Dr C H Miller, and the Oliver Sharpey Lecture, by Dr C Bolton The medals and scholarships awarded were next referred to, the fact that there were no candidates for the Murchison scholarship being announced After reviewing the principal matters which had come before the President, the Comitia, and the various boards and committees the President read obituary notices of the six Fellows who had died during the year—namely, Sir Lauder Brunton, Bart, Dr William Orange, C B, Dr Duncan Burgess, Dr W W H Tate, Dr William Cayley and Sir James F Goodhart Bart A ballot was taken for the office of President, and Dr Taylor was re-elected After some formal business the Comitia was dissolved

Royal Institute of Public Health —A second course of lectures and discussions on "Public Health Problems under War and After war Conditions" will be held in the lecture hall of the Institute on Wednesdays from April 18th to July 25th inclusive, at 4 P M The lectures range over a large area of immediately pressing topics, each of which is to be dealt with by an acknowledged expert, and discussion will follow the delivery of the lecture Medical officers of health, medical practitioners, sanitarians, and others engaged in public health work are invited to attend A syllabus of the course may be obtained on application to the secretary, 37, Russell square, London, W C 1

Metropolitan Asylums Board Diploma in Public Health —A course of lectures and demonstrations (lasting three months), in hospital administration will be given at the North Western Hospital Lawn road, Hampstead, London, N W, by Dr J E Beggs, medical superintendent, on Tuesdays and Fridays at 5 P M, beginning Tuesday, May 8th The fee for the course is £3 3s, and further particulars may be obtained from the Clerk to the Metropolitan Asylums Board, Embankment, London, E C 4

Institute of Hygiene —The Principal of the Institute, Mr J. Grant Ramsay, delivered on March 29th a lecture on "The Problem of Food, Fitness and National Resources" Proper feeding was, he said, the foundation of fitness He had come across strong healthy people in the worst slums of Europe, but always found that they were well fed, he had never met or heard of healthy people, even living in the best surroundings, who were badly fed Proper feeding, however, did not necessarily mean high feeding or large feeding, it meant eating the right foods, in the right quantity, at the right time, and in the right way Halliburton had advocated the eating of rather more than was actually essential, while Chittenden believed we were healthier with rather less than the accepted standard Nature was very accommodating, and there was much to be said for both theories, but we had followed Halliburton so long that we could now afford to give Chittenden a chance Those who could afford to do so should continue to buy the best foods and the best parts, leaving the food of the poor as far as possible to the poor, who were more influenced by habit, and would continue to buy what they had been accustomed to

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to The Lancet *Office, directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

Bennett James M.R.C.S L R C.P Lond., D P H has been appointed Medical Officer of Health to the Runcorn Rural District Council

Clarke, A. E. M.D Lond., Certifying Surgeon under the Factory and Workshop Acts for Rickmansworth

Mackenzie, J J R M.B Ch.B Edin Certifying Surgeon under the Factory and Workshop Acts for Wansford Northampton.

Mogg J A H L R.C P & S Edin L.F P S Glasg Certifying Surgeon under the Factory and Workshop Acts for Woodstock.

Naish Lucy M B Lond Lady Tutor in Anatomy *vice* Dr Sophia Witts resigned in the University of Sheffield

Outred C. D, M.R.C S., L.R.C P Lond., Certifying Surgeon under the Factory and Workshop Acts for Gravesend District.

Ross, H Certifying Surgeon under the Factory Act for the City of London vice R S. Mair

Sellers W H. L M B, C.M Edin, M R.C S to be one of the Medical Referees under the Workmen s Compensation Act 1906, for County Court Circuit No 4

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

Barrow in Furness North Lonsdale Hospital.—House Surgeon Salary £250 per annum, with board &c

Bath Eastern Dispensary—Resident Medical Officer Salary £140 per annum, with furnished rooms, &c.

Bodmin Cornwall County Asylum—Female Junior Assistant Medical Officer Salary £200 per annum with board &c

Bolton Infirmary and Dispensary—Second House Surgeon Salary £200 per annum with board, &c

Bristol Royal Hospital for Sick Children and Women.—Female House Surgeon. Salary £150 per annum with board &c.

Bristol Royal Infirmary—House Physician and House Surgeon Salary at rate of £120 per annum with board &c

Burnley Victoria Hospital.—House Surgeon Salary £160 per annum with board &c.

Bury Infirmary—Junior House Surgeon. Salary £150 per annum with board &c.

Charing Cross Hospital, Agar-street W C—House Physician and House Surgeon. Salaries £100 per annum with board &c

Chesterfield and North Derbyshire Hospital.—House Surgeon Salary £200 per annum with board &c

Chichester, Royal West Sussex Hospital.—House Surgeon Salary at rate of £150 and War Bonus at rate of £50 per annum with board &c.

Great Northern Central Hospital, Holloway road N—Resident Medical Officer Salary £200 per annum with board &c.

Hospital for Consumption and Diseases of the Chest Brompton—House Physician for six months. Salary 30 guineas

Huddersfield Storthes Hall Asylum Kirkburton near Huddersfield —Locum Tenens Salary £7 7s per week, with board &c.

Leeds Public Dispensary—Second Female Resident Medical Officer Salary £200 per annum with board &c

Liverpool Brownlow Hill Institution—Resident Assistant Medical Officer Salary at rate of £300 per annum with rations &c

London Temperance Hospital, Hampstead road N W 1—Temporary Anæsthetist. Salary 25 guineas per annum

Maidstone, West Kent General Hospital.—Assistant House Surgeon Salary £125 per annum with board &c

Manchester Ancoats Hospital.—House Physician Salary £150 per annum with board, &c.

Manchester County Asylum Prestwich —Locum Tenens Salary £7 7s per week with board &c.

Manchester Northern Hospital for Women and Children Park place Cheetham Hill road.—House Surgeon Salary £150 per annum with board &c

Netley Welsh Hospital.—Medical Officer for Pathological Department Salary £400 per annum with board, &c

Northampton General Hospital.—House Surgeon Salary £150 per annum with board &c

Nottingham Notts Education Committee—Female Assistant School Medical Officer Salary £300 per annum.

Queen Mary s Hospital for the East End Stratford.—House Surgeon

Queen s Hospital for Children Hackney road Bethnal Green E—House Physician Casualty House Surgeon, and House Surgeon *for six months* Salary £100 per annum with board &c.

Reading Royal Berkshire Hospital.—Resident Clinical Assistant for six months Salary £150 with board &c

Rotherham Hospital.—Junior House Surgeon. Salary £150 per annum with board &c.

Royal College of Surgeons of England—Examiners.

St Peter s Hospital for Stone, Etc Henrietta street, Covent Garden W C—Junior House Surgeon for six months. Salary at rate of £75 per annum with board &c. Also Junior Anæsthetist.

Serbian Relief Fund 5 Cromwell road London, S W 7—Medecin Chef to Hospital on Salonica Front.

Sheffield Royal Infirmary—House Physician. Salary £120 per annum with board &c

Shrewsbury Shirlett Sanatorium Shropshire—Temporary Assistant Resident Medical Superintendent Salary £300 per annum

West Bromwich and District Hospital.—Assistant House Surgeon Salary £120 per annum with board &c.

Whitehaven and West Cumberland Infirmary—Resident House Surgeon Salary £150 per annum with board &c

Winchester, Royal Hampshire County Hospital.—Female Assistant Resident Medical Officer Salary £250 per annum with board &c

The Chief Inspector of Factories, Home Office London S W gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Brynamman and Bishop s Waltham

Births, Marriages, and Deaths.

BIRTHS

Dobrashian—On April 6th at Oakley-square N W the wife of Lieutenant G Rowland Dobrashian R.A M C, of a son

Hallows—On April 5th at Gloucester-gate, Regent s Park Mary wife of Captain Norman F Hallows R A.M C. of a son

Kidd—On April 4th at Harley street, London the wife of Frank Kidd F R C S, of a son

Pennell.—On April 2nd at Winchmore Hill N the wife of Vernon Pennell M A. M B., B C Cantab—a son

Pinson—On April 5th at Stockport-road, Cheadle, the wife of K. B Pinson M B. M.R C S of a daughter

Pringle.—On March 30th at Glaslyn Crescent road Ipswich Jessie Eva (*née* Hart) M B B S the wife of Arthur Young Pringle M R C S L R C P of a son

Rainey—At Wakefield House Eastbourne the wife of Captain E. H Rainey R A M C of a daughter

Webb—On April 4th at Grosvenor-square Southampton, the wife of Captain G Harvey D Webb, R.A.M C, of a son.

MARRIAGES

Cardew—Graeme Marshall.—On April 4th at the Parish Church Cheltenham, Arthur Barrett Cardew, M C F R C S R A.M C of Overbury, Charlton Kings to Nora Graeme Marshall second daughter of the late James Marshall, of Hillhead Glasgow

Fraser—Mellor.—On March 27th at the Parish Church Ashton under-Lyne Thomas Lochhead Fraser Captain R A.M.C. to Dorothy Walton only child of the late Mr. A. E Mellor, J P of Springfield View Ashton under-Lyne

Kerby—Leman—On April 5th, at St. Mary s Strand by the Rev Harcourt Hillersdon, Surgeon T R F Kerby R.N to Lilian, only daughter of D Jackson Leman of Westbourne-terrace W

Morgan—Reed—On March 30th at Valparaiso, H Lewis Morgan F R C.S to Minnie, daughter of Mr. and Mrs Wm. Reed Stockton on-Tees

Pearse—Wilburn—On March 30th at St Saviour s Church Colgate Captain Robin Pearse F R.C S C.A.M C of Toronto, to Amy Christine eldest daughter of Mr and Mrs E. J Wilburn The Croft Southwick

DEATHS

Barker—On April 5th Henry Martyn Barker M.D of Staincliff Sandown Isle of Wight

Boult—On Palm Sunday at St. Margaret s terrace St. Leonard s-on Sea, Edmund Farrington Boult Surgeon Major R A.M C (retired) eldest son of the late Edmund Boult F R C S, of Bath

Joy—On April 1st at the Manor House Tamworth Staffs, Charles H Joy M D aged 46 years

Marr—On Feb. 19th at Bhusawal India, of enteric James Marr M B C M District Surgeon G I P Railway aged 47 years.

Potter.—On April 9th suddenly Henry Percy Potter M D F R.C.S., for 37 years Medical Superintendent of Kensington Infirmary in his 63rd year

N B—A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

Notes, Short Comments, and Answers to Correspondents.

MEDICAL NOTES IN HISTORICAL MANUSCRIPTS THE STUART PAPERS

FOLLOWING are some further excerpts from Part VI of the Stuart Papers The first instalment appeared in THE LANCET of April 7th, p 558

Death of Queen Mary

The Earl of Panmure to the Duke of Mar —1718, May 9 Paris — ' The Queen was taken ill on Sunday the 1st, which I did not know till Monday evening so I went to St. Germains Tuesday morning and Dr Blair went with me They told us there that the Queen was better and that they did not think her in any danger Dr Blair did not then see her nor was his advice asked but on Saturday morning an express came for him so he went to St Germains in all haste, but found her speechless and past all hopes of recovery for she died about two hours after I'm told that Dr Garvan and the King of France's physicians thought she was in no danger the night before and were resolved to have given her physic the next day but I will not enlarge on so melancholy a subject "

Father Gaillard the Queen's Confessor to James III —1718 May 9 St Germains.— ' Il s'agit de vous instruire en detail pour votre consolation premièrement de ce qui s'est passe dans cette sainte mort et secondement de ce qui vous y regarde personnellement par les sentimens que la Reyne m'a marqués a vostre egard et par tout ce qu'elle m'a chargé de vous ecrire Premier article de ce qui c'est passe à la mort de la Reyne Il y avoit quelque temps environ un mois que la Reyne avoit esté attaquée d'un rhûme qui disparoissoit quelquefois et qui de temps en temps se renouvelloit n'estant pas toutafait gueri La Reyne se portoit assez bien le dimanche, premier jour de may feste de St Jaques et St Phillippe. C'estoit le jour qu'elle avoit choisi pour remplir l'heure de son adoration devant le St Sacrement, s'estant associee a la confrairie de parroisse de St Germain Sa Majesté se rendit pour cela a l'eglise de la parroisse cinq heures du dimanche apres disner ayant fait ses devotions a l'ordinaire le matin dans sa chapelle et y ayant recité le rosaire a quatre heures a la maniere accoutumée Le St Sacrement fut exposé à la parroisse des que la Reyne y fut arrivée un peu avant cinq heures La Reyne commenca son adoration à genoux où elle se tint pendant une demiheure, et fut assisse sur ses jambes la demiheure suivante, n'ayant pas voulu s'asseoir sur son fauteuil qui luy estoit preparé L'heure de l'adoration finie le salut fut commencé à six heures auquel elle assista à genoux En suite elle monta dans son carrosse pour s'aller promener sur la terrasse ou elle sentit du froid. C'est ce qui la fit retourner apres demiheure de promenade sans pourtant s'estre trouvee incommodee car elle soupa ce soir la avec plus d'appetit qu'elle n'avoit fait depuis longtemps Elle se coucha a l'heure ordinaire mais elle passa assez mal la nuit jusqu'a cinq heures du matin du lundy qu'elle fut saisie du frisson de la fievre qui dura une heure ce qui fut suivi de la chaleur C'est ce qui fut compte pour peu de chose Je fus apelle et j'eus l'honneur de s'entretenir selon tous les sentimens de sa pieté Cette fievre n'a point cessé jusqu'au dernier jour de sa mort, elle parût plus considerable par les redoublemens qui survenoient, l'un le matin plus leger, l'autre sur les quatre heures de l'apres disner qui commencoit par une toux assez violente c'est ce qui a duré jusqu'au dernier jour La nouvelle de cette maladie ayant este sceüe à Paris Monseigneur le Mareschal de Villeroy par son zele très vif et très fidelle par la Reyne me fit l'honneur de m'ecrire pour offrir à la Reyne les medecins de la cour qu'elle souhaiteroit Sa Majesté demanda Monsieur Dodart, aujourd huy premier medicin du roy et Monsieur Boudin Ce sont les deux qui la traittement dans sa grande maladie dernière Ces medecins sont venus tous les jours depuis mardy jusqu'au vendredy, veille de la mort D'abort ils ne trouverent rien de mortel dans cette fievre ils ordonnerent une second saignée, la premiere ayant esté faite des le lundy par l'ordre de Mr le chevalier Garven Cette suite de redoublements et de toux les a embarrassés mais ils n'en ont pas paru trop alarmes Le mercredy et jeudy se passerent de mesme facon et mesme la nuit du jeudy au vendredy fut si bonne qu'on commenca à mieux esperer et mesmes on ordonna une medicine pour le lendemain samedy Pendant tout le temps la j'ay rendu mes assiduités à la reyne la messe tous les jours et les prieres ont esté dites dans sa chambre Des le jeudy la reyne demanda a se confessor Les medicins me prierent de l'en detourner de peur que la preparation à la confession ne donnat quelque agitation, qui lut pû troubler le bon estat qui sembloit s'establir Je priay la reyne de differer sa confession Le lendemain vendredy elle m'en parla encore avec quelque inquietude de mourir disoit elle sans confession Ce qui me determina à consentir à sa demande fut une toux très forte et un redoublement tres violent qui la prit vers les cinq heures du vendredy peu apres que les medecins furent partis avec esperance de la trouver mieux le lendemain disant pourtant qu'ils trouvoient la fievre bien ardente Je traitty alors avec la reyne l'affaire de la confession sur l'empressement qu'elle m'avoit marqué Pour la delivrer de tout inquietude je la priay de prendre tranquillement tout cette preparation qu'il falloit faire tranquillement sans manquer à prendre tous les soulagemens qui devoient l'interrompre Ainsi fut il fait. La reyne me fit sa confession avec les sentimens ordinaires de sa grande piété et de son vif amour pour Dieu dans une grande paix Quelque heure apres ou trouva que la reyne s'afoiblissoit et que la violence du mal s'augmentoit. Je pris avis de Mr Garven s'il jugeoit qu'il fut temps de luy faire recevoir les derniers sacremens Il en fut d'avis je n'eus nulle peine à en informer la reyne qui n'en fut pas plus emue que si on luy avoit dit d'aller entendre la messe dans les temps de sa santé Je fis avertir Monsieur le prieur curé de la parroisse pendant que j'estois attaché à preparer la reyne à la reception des divins sacremens L'extreme onction luy fait premierement donnés par M le Curé et en suite le st viatique Avant que de la recevoir elle fit demander pardon à toute l'assistante des peines qu'elle avoit pu faire a qui que ce soit, donc monsieur le curé fit le recit public. Depuis ce temps la, ou tout fut achievé à onze heures et demie du vendredy jusqu'au lendemain sept heures et demie du samedy la reyne ne vouloit plus s'entretenir qu'avec Dieu Elle demanda les prieres des agonisans sur les deux heures apres minuit. Comme on les faisoit au pieds de son lit elle ordonna qu'on s'aprochat pour les mieux entendre et y repondre Les prieres ont esté faits deux fois par messieurs les aumosniers de la reyne, auquels je rependois Mon occupation fut depuis onze heures et demie du soir vendredy jusqu'à sept heures et demie samedy de me tenir auprès de la reyne, et de me presenter de temps en temps à elle pour luy fournir des sentimens de pieté Certainement elle n'en avoit pas besoin Car Dieu luy inspiroit luy mesme les plus dévots sentimens Elle voulut avoir le crucifix entre ses mains et sous ses yeux et tout cela partagé entre les prieres que l'on faisoit aupres d'elle, et les sentimens qu'elle prenoit ou d'elle mesme ou de ce que je luy suggerois Tout cela s'est passé avec toute la presence de son esprit pendant que le corps se détruisoit par l'oppression de la poitrine ou tout le mal a abouti et par l'inflammation qui s'y est faite, mais avec quelle douce patience a elle tout souffert pendant la durée de huit heures apres les sacremens receus ayant toujours non seulement l'esprit mais la parole libre jusques à un quart d'heure avant sa mort, et mesmes dans ce quart d'heure elle me donna des signes qu'elle entendoit tout ce qui je luy disois sans pouvoir former des paroles pour y repondre. Ainsi ainsi cette sainte reyne s'est elle endormie au Seigneur auquel du samedy matin 7e may 1718 J'avois oublie qu'a quatre heures du matin elle demanda que la messe fut dite dans sa chambre à quoy elle s'unit par toute l'affection de son cœur 2nd Article: Voicy ce qui vous regarde personnellement dans les sentimens de la reyne vous aves connu son cœur tendrement maternel qui s'est toujours conserve tel jusqu'a sa mort, vous n'ignores pas aussi les peines qu'elle a ressenties sur les derniers ordres qu'elle avoit receus de votre Majeste Très persuadée de toute vostre affection elle m'a ordonne de vous mander que tout ce qui luy estoit venu de vostre part, quoyque contraire à ses pensées et à ses inclinations n'avoit fait aucune impression contraire à son affection et qu'elle ne vous scavoit aucun mauvais grè mais qu'elle vous prioit de luy pardonner toutes les peines qu'elle auroit pu vous faire par les petites contestations sur quoy elle m'a ordonné en termes exprès de vous dire de sa part les choses les plus tendres et de vous asseurer qu'esperant la misericorde de Dieu elle prieroit le Seigneur dans le ciel pour le succes de vos affaires presentes, j'ay cru mesmes avoir entendu qu'elle a nomme particulierement l'affaire des Suedois D'ailleurs en recevant le st viatique, ayante demandé qu'on priat pour elle, elle ajouta pour le roi mon fils âfin qu'il perde mille vies plutost que de souffrir la moindre alteration de sa loy ce qui fut repeté tout haut par M le curé lors que de la part de la reyne il dit, que sa Majesté demandoit pardon de toutes les peines qu'elle avoit pu faire à qui que ce soit. En suite elle s'est fait aporter un petit crucifix qu'elle a mis entre les mains de madame de Molza avec ordre de vous l'envoyer de sa part, ce qu'elle luy a encore reitere une autrefois, âfin que son ordre sur ce sujet sois fidellement executé "

Sir Hugh Paterson to the Duke of Mar —1718, May 20 Rotterdam.— We have now the afflicting news confirmed of the good Queen's death By a letter I have seen from one that was present during her sickness till her death I find that the physicians that attended her are much blamed for their conduct, and since I mention this, I must tell you that many of the King's friends both here and at home seem concerned that he has not a more skilled physician and of a better character about his person than the one they hear is at present with him I remember very well when the Princess died that some of those then present complained very much in their letters to England, of the conduct of the physicians that attended her and that he that's now with the King was particularly blamed about it. I hope he shall have very little occasion for the advice of any of them but, should it please God to make it otherwise, it would be no small grief and uneasiness to his friends to think he should want the attendance of a prudent skilled physician which I must take the liberty of saying Dr Macgie is far from being thought. I have often been pressed by many to represent this, which I have omitted doing till now therefore, if it's thought officious I hope it will be excused since it proceeds from no other motive than a true zeal for the King's welfare "

(*To be concluded.*)

DRUGGING BY A DENTIST

To the Editor of THE LANCET

SIR —I was last night called to see a patient who gave me the following account He had that day been to see a dentist who was treating him for a carious tooth, to which the dentist applied a dressing and gave him a bottle containing 42 pills, each of which, according to the label on the bottle, contained morph sulph gr ¼ He was directed to take one to three till relieved of pain Fortunately, after taking two he felt ill and sent for me

I am, Sir, yours faithfully,
W GILCHRIST BURNIE

Bradford April 3rd 1917

THE MANGOLD WURZEL

THE Food Controller has just issued recipes for cooking mangold wurzels In this connexion the following paragraph from The Dictionary of the Farm,' by the Rev W L Rham, vicar of Winkfield, Berkshire (1773-1843), a book which was very popular in its time, is of interest to medical men —

> The common field beet for cattle which has long been known in Germany was introduced into England at the latter end of the last century and its introduction is generally attributed to the late Dr Lettsom a physician of reputation and a member of the Society of Friends The German name is mangold wurzel" or mangold" root but it is commonly pronounced "mangel wurzel which means

scarcity root and by a strange translation it is called in French *racine d'abondance*, or root of plenty as well as *racine de disette* or root of scarcity The name of field-beet is much more appropriate

Mr Rham also supplies much further information concerning the mangold and its cultivation In the Dictionary of National Biography it is stated that John Coakley Lettsom translated a pamphlet on the subject from the French of Abbé de Commerell in 1787, grew the mangold himself, and imported a large quantity which he distributed to farmers and others in this country as well as in Europe, America, and the West Indies

The following are three recipes for cooking the mangold wurzel issued by the Food Controller —

Recipe 1—Ingredients 1 lb mangold wurzel ¼ lb vegetable butter or dripping 2 small onions pepper and salt.

Cook the mangold wurzel in the butter for about 20 minutes or until tender Then add the onion (which has been previously chopped) and pepper and salt Drain for a moment before serving on cooked lentils buttered rice, or cheese sauce

Recipe 2—Ingredients 1 lb mangold wurzel 2 oz. vegetable butter or dripping 2 tablespoonfuls of stock (vegetable or meat) a little pepper and salt

Cut the mangold wurzel into small dice Dust them in whole meal flour Place in saucepan together with the butter and stock and let simmer till tender but care must be taken that the mixture does not boil Serve as a vegetable

Recipe 3—Ingredients 1 lb mangold wurzel

Cut into dice and cook as for No 1 Drain and then dip into a batter made from the following: 1 egg ¼ lb flour 2 oz bread crumbs sufficient milk to make a nice frying batter Fry in vegetable butter and other cooking butter or dripping

Medical Diary for the ensuing Week.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street W

MEETINGS OF SECTIONS

Thursday April 19th.

DERMATOLOGY (Hon. Secretaries—J E R. McDonagh, Henry MacCormac): at 5 P M.

Paper

Major H MacCormac Skin Diseases as seen in War Conditions in France.

N B —No cases will be shown at this Meeting

Friday April 20th.

ELECTRO-THERAPEUTICS (Hon. Secretaries—R. P Cumberbatch R. Knox): at 8.30 P.M

Paper

Dr H J Gauvain Heliotherapy and X Rays in the Treatment of Surgical Tuberculosis

ROYAL MICROSCOPICAL SOCIETY 20 Hanover-square W

WEDNESDAY —8 P M. Dr E C Hort and Mr F M Duncan The Life-history of the Meningococci and Other Bacteria

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn Fields, W C

Museum Demonstrations (Pathology) for Medical Students and Practitioners and First-Aid and Ambulance Students —

MONDAY —5 P M. Mr S G Shattock Syphilis

POST GRADUATE COLLEGE West London Hospital, Hammersmith road, W

MONDAY —2 P M Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Baldwin: Operations Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

WEDNESDAY —10 A.M Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose and Ear 2 P.M Medical and Surgical Clinics X Rays. Mr Pardoe: Operations

THURSDAY —2 P.M. Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman Diseases of the Eye

FRIDAY —10 A.M. Dr Simson: Gynæcological Operations 2 P.M. Medical and Surgical Clinics. X Rays Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M., Dr Saunders: Diseases of Children Dr Banks Davis: Operations of the Throat, Nose and Ear Mr B Harman: Eye Operations 2 P M. Medical and Surgical Clinics. X Rays. Mr Pardoe: Operations

ROYAL INSTITUTE OF PUBLIC HEALTH Lecture Hall of the Institute 37 Russell-square W C 1

Course of Lectures and Discussions on Public Health Problems under War and After war Conditions:—

WEDNESDAY —4 P.M., Lecture I:—Sir Robert Armstrong-Jones M.D Mental States and the War Followed by a discussion.

The following journals, magazines, &c. have been received —

British Journal of Ophthalmology British Journal of Children's Diseases New Zealand Medical Journal Journal of the Missouri State Medical Association Archives of Internal Medicine Quarterly Journal of Experimental Physiology Practitioner American Medicine Dublin Journal of Medical Science Archives de Medecine et Pharmacie Navale British Dental Journal Edinburgh Medical Journal British Journal of Dental Science

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot undertake to return MSS not used.

Offices 423, STRAND, LONDON, W C 2

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET"

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET Commencing with the new year, the price was raised to 8*d* The rates of subscription remain as revised in October

INLAND	
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Subscriptions (which may commence at any time) are payable in advance Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W C 2

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423 Strand London, W C 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c, should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices

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Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a m by Steward's Instruments*)

THE LANCET Office April 11th 1917

Date	Rain fall.	Solar Radio in Vacuo	Maximum Temp Shade.	Min. Tem	Wet Bulb	Dry Bulb	Remarks
April 5	..	90	52	34	36	37	Fine
" 6	...	86	43	33	37	38	Snowing
" 7	0·23	76	46	33	34	35	Fine
" 8	..	83	51	32	39	42	Fine
" 9	0·04	75	48	39	38	39	Cloudy
" 10	0·14	76	43	35	33	35	Cloudy
" 11	0·19	80	44	34	35	35	Snowing

Other information which we have been accustomed to give in these Readings is withheld for the period of the war

BOOKS, ETC, RECEIVED

AMERICAN PEDIATRIC SOCIETY (Secretary Dr H C CARPENTER) 1805 Spruce street, Philadelphia Pa U S A

Transactions Edited by L E La Fetra, M D Vol XXVIII

BAILLIÈRE TINDALL, AND COX London

Chemistry for Beginners By C T Kingzett F I C, F C S 2s 6d net.

BELL, G AND SONS London

Happy Warrior and other Poems By Augustus H Cook, M B Lond 2s net

CAMBRIDGE UNIVERSITY PRESS

Finch and Baines A Seventeenth Century Friendship By Archibald Malloch, B A M D, Temporary Captain, Canadian Army Medical Corps 10s 6d net

CONSTABLE AND CO LTD

Ambulance No 10 Personal Letters from the Front By Leslie Buswell 3s 6d net

DUNOD H ET PINAT, E 47 et 49 Quai des Grands-Augustins Paris VIe

Organisation Physiologique du Travail. Par Jules Amar Directeur du Laboratoire des recherches sur le travail professionnel au Conservatoire National des Arts et Métiers Préface de H le Chatelier Membre de l'Institut 18 fr

GEORGE WILLIAM HOOPER FOUNDATION FOR MEDICAL RESEARCH University of California Hospital Second and Parnassus avenues San Francisco U S A

Collected Reprints Vol. I, 1915-1916

HARRISON AND SONS London

Acute Appendicitis Practical Points from 25 Years Experience. By C Hamilton Whiteford M R.C S, L.R C P 4s net

HEINEMANN WILLIAM, London

Painless Childbirth A General Survey of all Painless Methods with Special Stress on Twilight Sleep" and its Extension to America. By Marguerite Tracy and Mary Boyd

LAURIE, T WERNER London

War By Pierre Loti Translated by Marjorie Laurie 2s 6d net

Regimental Silhouettes By C Gribble With Preface by Sir H L Smith Dorrien G C B G C M G D S O 1s net

TIMES OF INDIA, Bombay

Sanitation in India. By J A. Turner C I E, M D, D P H, and Others Second edition

URGENCY CASES HOSPITAL, 37 Queen's gate, S W

Le Faux Miroir—Reflections from the Urgency Cases Hospital 2s 6d

WRIGHT J Bristol SIMPKIN MARSHALL, London

Index of Differential Diagnosis of Main Symptoms Edited by Herbert French M.A, M D Oxon. F R C P Lond. Second edition 42s net

Communications, Letters, &c., have been received from—

A.—Lieut. Col. W Alpin, I M S Anglo-French Drug Co, Lond. Messrs Arnold and Sons Lond *Answers*, Editor of Messrs Allen and Hanburys, Lond Anglo-American Pharmaceutical Co, Croydon Archives Médicales Belges, Beveren sur-Yser Messrs R Anderson and Son Edinburgh; Dr A. Abrahams.

B.—Dr S A Brown New York, British Drug Houses Co, Lond., Messrs Burroughs Wellcome and Co, Lond.; Board of Missions Nashville U S A. Secretaries Asst; Mrs Burroughs Lond Miss A. J Brown Lond. Messrs Brentano Paris Messrs W H Bailey and Son Lond. Mr J M Barwick, Yeadon Capt. S G Billington, R A.M C Dr G Booth Chesterfield Major F C Bell, C.A.M C British Medical Association Wandsworth Division Hon Sec of; Dr G Blacker, Lond Messrs Butterworth and Co. (India) Calcutta Board of Education, Lond; Messrs W A Bates Leicester; Dr W G Burnie, Bradford; Major W Blackwood R A.M.C, Mr W Bryce Edinburgh

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D—Messrs W Dawson and Sons Lond Dr W A. Daley, Bootle Mr F N Doubleday Lond; Dr R Donaldson, Reading Sir James M. Davidson Lond. Dr W F Dearden, Manchester

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I—Capt A. C Inman, R.A.M C Incorporated Society of Trained Masseuses Lond. India, Medical Services in Director of, Simla.

J—*Journal of the Royal Army Medical Corps*, Mr C A Joll Lond. Dr W H. Judson Lond. Lieut. W L. Johnston *R.A.M.C* Dr J E L Johnston Minna Jeyes Sanitary Compounds Co, Lond

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Z—Dr K. G Zwick Berne.

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G—*Gazette Médicale de Paris* Mr P Grogono Lond. G N A. Capt J C Glen R.A.M C; Mr J N *Goldsmith*, Lond Messrs Grantham and Co, Reading

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J—Dr C S Jaffe, Lond.

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W—Dr J Weir Lond.; Capt A W G Woodforde, R.A.M C Mr G H Widger Limpsfield Dr J F Wilkinson, Melbourne

The Lettsomian Lectures

ON

WAR SURGERY OF THE ABDOMEN

Delivered before the Medical Society of London

BY CUTHBERT WALLACE, B S LOND,
F R C S ENG, C M G,

SURGEON TO ST THOMAS'S HOSPITAL CONSULTING SURGEON BRITISH EXPEDITIONARY FORCE.

LECTURE II[1]

Delivered on March 22nd 1917

THE POSSIBILITY OF SPONTANEOUS RECOVERY AFTER THE PERFORATION OF HOLLOW VISCERA

MR PRESIDENT AND GENTLEMEN,—It is quite true that people do recover after wounds of the hollow viscera, but the number is very few Those who recover may be said to be the exceptions that prove the rule

1. We have instances of late-formed fæcal fistula which may be due to sloughing of the bowel wall or to actual perforation There have been fairly frequent instances of recovery after wounds of the colon as has been insisted on by Makins, who by the way, attributes such a favourable result to the intense local reaction produced by the contents of the colon

2. Actual proof of the healing of the stomach was seen in a case in which a fragment of a mantle of a bullet perforated the liver on the anterior surface penetrated its thickness, and wounded the stomach. The officer lived some days and at the post-mortem one found evidence of a wound of the stomach which was closed, partly by its own reaction and partly by the application of the left lobe of the liver The post-mortem was made by Captain J S Dunn. I have no doubt that if this officer had not succumbed to his other injuries the wound of the stomach would at the worst have led to a localised abscess

3 For the history of this remarkable case I am indebted to Surgeon General Bowlby and Captain Bell

A soldier was shot from side to side through the body at the battle of Loos He was not operated on and recovered As far as I know, there was nothing special about his convalescence He was again shot in the abdomen in the battle of the Somme and was operated upon When the abdomen was opened several perforations of the small intestines were found in the neighbourhood of a mass of adhesions The wounded and adherent segments were excised and the man made a good recovery On slitting up the adherent coils an entero-enterostomy was found between two adjacent loops in addition there were several small herniated diverticula of the mucous membrane obviously pointing to closure of the previous penetrations

This case is of interest because the process of healing corresponds to that which Captain H. Drummond has shown to be the case when the intestines of rabbits are perforated and put back without suture The herniated mucous membrane remains herniated and gradually becomes covered with a layer of lymph which slowly organises and seals the hole, the herniated mucous membrane still forms a diverticulum

RUPTURE OF VISCERA WITHOUT PENETRATION OF THE ABDOMINAL CAVITY

1 As in civil life one meets with a fair number of abdominal injuries caused by horse kicks, by falling in of dug-outs, by burial of men by shell explosions and by blows of fragments of wood which are hurled about, they present nothing out of the common and the injuries seen are the same as in civil life Captain J B Haycraft had one case which may be mentioned in which the post-mortem examination on a man who died after burial by shell explosion showed numerous contusions of the small intestine without rupture

2. Similar injuries are caused by large shell fragments usually shell caps and several cases of the latter injury have been seen in which rupture of the intestine was accompanied by extensive contusions Some years ago Makins wrote a paper on this subject and he came to the conclusion that such injuries are caused by the bowel being caught between the unyielding posterior abdominal wall and the on coming object This supposition, I think, is strengthened by the association of bruises along with perforations in the case already quoted

3 *Rupture of solid organs by indirect violence of a passing projectile* —Such injuries are by no means uncommon. Here is a picture of a kidney in which many cracks in the capsule were produced by shell fragments which did not themselves touch the organ. I have also seen two cases of ruptured spleen, in each case the left lower chest was hit and the ribs broken in both cases In one the diaphragm was intact but on opening the peritoneum much blood escaped and there was an extensive tear in the spleen In another case the diaphragm was ruptured over a small area, the blow being a glancing one There was a corresponding wound on the outer surface of the spleen, and from this wound there ran in all directions radiating fissures in the capsule, showing that the spleen had been burst by the indirect blow it had received

4 *Cases in which the viscera are damaged by indriven bone fragments* —(*a*) There are many cases of injury to the liver and spleen by the driving in of fractured ribs There is nothing particular in these

(*b*) The cæcum and the ascending and descending colon and also the small gut in the pelvis are all apt to be injured by small bony spicules driven in through the peritoneum Although the projectile itself does not penetrate this membrane, it is important to remember this possibility because when such wounds are explored it is most probable that the small holes caused by the bony fragments would be overlooked and the peritoneum assumed inviolate

5 *Rupture of hollow organs by indirect violence* —There seem to be two classes (*a*) Rupture of the intestine by a bullet without penetration, and (*b*) rupture of a viscus out of the track of a perforating bullet Cases have been reported by Owen Richards, John Fraser, J W Dew, and others

(*a*) The first case was that of a man whose recti were divided almost completely by bullet The wound was explored and the posterior rectus sheath found intact As there were no symptoms the abdomen was not opened the man died At the post-mortem examination a careful search failed to show any rupture of the peritoneum There were three holes in the small intestine which lay immediately under the wound in the abdominal wall showing the gut had not moved although more than 24 hours had elapsed since the receipt of the injury

Fraser's case was that of a man wounded by a piece of shell in the right iliac fossa and in which the cæcum was found bruised and a small hole in the mesenteric border of the ileum

In Dew s case the projectile had cut all the abdominal wall through save the peritoneum through which the cæcum could be seen As there were no symptoms the abdomen was not opened but the man died from a ruptured ileum

(*b*) Fraser has also published another case in which the bullet penetrated the abdomen just below the umbilicus. There were no symptoms at first, but when they arose later on cœliotomy showed a ruptured bladder The bladder was apparently out of the direct line of the projectile

These ruptures may be caused apparently in three possible ways For instance, (1) when an object such as the abdomen and its contents made up of layers of varying toughness, is sharply hit more friable layers underneath may come away, while the more resisting overlying layers remained intact (2) This may be termed the "paper bag' theory, the intestine being ruptured by a smart blow in a similar way to that in which an inflated paper bag is burst on being hit. I do not know that there is any proof that this happens but it is rather a seductive theory (3) There is another possibility which must not be lost sight of. A man when he is hit may fall to the ground or against some object and the ruptured intestine be due to the blow thus produced and not to the actual missile which was the indirect cause of the fall

MECHANISM OF WOUND PRODUCTION AFTER PENETRATION

The multiplicity of wounds of the small intestine has raised some doubt as to their method of production, especially in the case of bullets where types of wound widely different in nature are seen The question arises, Can a bullet pursuing a straight course cause these injuries or must we invoke a rotation of the bullet or a bursting effect ?

If a bullet is rotating quickly on a transverse axis it could easily produce complete division of the gut but if it is radiating quickly enough to produce such injuries it is hard to see how it could at the same time produce small perforations Some support is given to the rotation theory by the retention of many bullets, as one knows that their flight is unstable at the end If the rotation theory is correct, one ought to have some evidence of this rotation at the entrance and exit holes As a matter of fact, it is impossible to establish any relations between the size of the entrance and exit wounds in the skin and the amount of damage done to the intestine As to the possibility of a bursting effect it is impossible, I think, to make any definite statement on the subject. All that one can say is that when great vessels are hit by bullets nothing has ever been seen in the nature of a lesion which suggested the presence of the so-called hydrostatic phenomena

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[1] Lecture I was published in THE LANCET of April 14th 1917

I am rather inclined to think myself that these different types of wound are caused by the varying state of distension of the small gut As is well known one meets with lengths of the small intestine alternately distended with air and collapsed If the bullet strikes a distended portion it will perforate it or cut a hole in it If it strikes a portion which is collapsed, the intestine is so small that the diameter of the bullet is such that it could divide both coats

DIAGNOSIS OF INTRAPERITONEAL DAMAGE

This is determined in three ways (*a*) By inspection, (*b*) by experience, (*c*) by symptoms With all possible care and an extensive experience and a full appreciation of the numerous fallacies, it is frequently difficult to make sure that the wound is penetrating If it is difficult when there is an entrance and exit wound it is still more so when there is only one wound It may be that shock hæmorrhage rigidity, or rapid pulse will be present, but in some cases which are received early there will be no such guides The wound of a hollow viscus may in itself have no symptoms if it is not extensive enough to produce shock, it is usually hæmorrhage or peritonitis which gives the danger signal As there is a distinct relation between the interval since the receipt of the wound and the operation it is important to be able to determine the probability of penetration

(*a*) *By Inspection*

Antero-posterior wounds are the easiest to judge The only point to be remembered is the thickness of the flank muscles Below the transpyloric plane a wound with the entrance on one side of the middle line and an exit exterior to the lateral body line of the same side is very often non penetrating, or one that has just opened the peritoneum Above the transpyloric line such a wound, owing to the rounded form of the thorax, is almost certain to be penetrating The bullet which passes in and out between the semilunar lines probably does not open the abdomen, while that wound that passes in and out outside these lines probably does In the longitudinal direction a bullet which enters near the costal margin and emerges above the groin will most likely traverse the abdomen Where it is a question of single wounds there is really nothing except the symptoms to guide one as it is usually impossible to tell the direction of the projectile A great deal of help is afforded by an X ray apparatus in such cases

One case may be quoted as showing the difficulty of judging where a missile has gone

A man was shot beside the umbilicus The shape of the wound suggested a bullet, the area was a dangerous one, so it was determined to explore the abdomen As the wound was in a convenient situation the exploratory incision was made through it It was then found that the rectus muscle was torn the length of the incision This was enlarged downwards to the pubes the muscle being much torn down to the bone, but the sheath and peritoneum were intact The bullet had passed down behind the pubes and, as there were no symptoms nothing further was done, and the case, after an interval of several days, was sent to the base doing well

(*b*) *By Experience*

This has shown that one has to be very careful in making a negative diagnosis and it has also shown the wisdom of operation in doubtful cases Bomb wounds require some notice under this heading The fragments into which a bomb is broken on explosion are often very small but so high is their velocity that they have very great power of penetration The wounds are often so small and insignificant that it sometimes takes some strength of mind to explore the abdomen, although the symptoms point to the possibility of visceral involvement The number of these wounds makes individual exploration impossible, and the only way of settling the matter is to explore the abdomen by a well placed incision, irrespective of the situation of the wounds

(*c*) *By Symptoms*

These may be enumerated as follows —Appearance, pulse, vomiting, hæmorrhage, rigidity, pain, tenderness, shock, and subjective sensations

Appearance —Usually a man hit in the abdomen looks ill He is shocked and cold, often in spite of blankets and hot bottles, with which he has been surrounded in the ambulance Sometimes he is apathetic and quiet, sometimes restless—sometimes from pain—sometimes from distress He may be blanched or of a fair colour, even normal in appearance Before rapid evacuation was the rule I was struck by the fallaciously good facial expression of some of these cases, and it was often that one experienced a shock on taking up such a man's hand to find it cold and clammy and the pulse running or even not palpable Such cases invariably die, and operation only hastens their end

Pulse —A rapid pulse, a pulse that does not fall, or a rising pulse is an indication for operation A slow pulse is not necessarily a contra indication unless the wound is in a non dangerous area such as the liver I have seen a man with a pulse of 60, with four holes in his small intestines, four hours after receipt of the injury A rapid pulse is caused by loss of blood, and later on by peritonitis and sepsis It does not seem to have any very definite connexion with the number of lesions of the intestine The pulse often falls with rest and infusion, and it often happens that a falling pulse is more an indication of the possibility of operation than a contra indication to operative measures A rising pulse is an indication for operation

From Table V one can see the general average of the pulse of a man wounded in the abdomen A pulse of 100 is very frequent and, on the whole gives a good prognosis A pulse of 110 seems to be a critical one, for the mortality after this rapidly mounts

TABLE IV

Pulse up to—	-60		-70		-80		-90		-100		-110		-120		-130		-140	
	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D	B	D
	1	1	3	0	8	6	14	10	49	23	12	19	21	46	5	23	7	36

B = To base D = Died.

Mention may be made here of unexpected results which some pulse rates show A man with a pulse of 160 with a wound in the liver went to the base without operation Another pulseless man recovered after his bladder and small intestine had been sutured A man with a pulse of 60 died from the effects of hæmorrhage, although the bleeding was stopped by operation A fourth man with a pulse of 90 died from gas gangrene in the abdominal wall, a fifth with a pulse of 80 died from peritonitis on the third day, and another with a pulse of 160 recovered, the reason of the rapidity being extraperitoneal hæmatoma of the bladder, which was drained From these instances it can be seen that, although the pulse is a very good indication, there are many surprises for the surgeon

Vomiting —Wounds of the stomach nearly always lead to vomiting and very often to hæmatemesis, but vomiting is also met with in all kinds of abdominal injury, and beyond the fact that its absence shows that the stomach is most probably not involved it has no special significance

Hæmorrhage —This will be dealt with under wounds of different organs, and it is sufficient to say here that with the exception of blanching and a rapid pulse both of which may be produced by other causes, the classical signs, such as restlessness, blindness, or air hunger, are usually absent When present it gives the ordinary physical signs but, as is well known, these are not very helpful, as to produce them the amount of blood may have to be very great

Rigidity —A very constant but varying symptom when the cases arrive It is seen in low thoracic injuries, wounds of the abdominal wall and in contusions of the abdomen and with true visceral injuries

(*a*) The rigidity produced in the abdomen by low thoracic injuries is well known, and it renders diagnosis very difficult, especially in those cases where from a study of the track the bullet may or may not have entered the abdomen

One such case I well remember in which a man, hit in the lower right axillary region, presented a universal rigidity of the abdominal wall accompanied by considerable pain His condition otherwise was not bad It was determined to watch him, and he was put to bed and kept quiet for three hours At the end of that time the rigidity had become board like There was considerable increase in his pain and his pulse rate was slightly accelerated An abdominal exploration showed that after all the abdomen was uninvolved, and that the only possible injury was a wound of the liver on its extraperitoneal surface Curiously enough this man died a week later from tetanus

I do not know that there is any royal road to diagnosis between a thoracic and abdominal wound , every case must be judged on its merits Captain B C Maybury has an idea that superficial abdominal tenderness is rather a feature of thoracic wounds

(*b*) In the case of abdominal wall wounds the rigidity is apt to be local and as a rule, it does not give rise to very much confusion. Contusions of the abdomen do present considerable difficulty, and in cases which have recovered without operation I have seen rigidity, an extremely rapid pulse, and pallor all combined. Wounds of the pelvic floor, even when not penetrating, will produce a reflex hardness of the anterior wall, and the same may be said for some wounds of the upper thigh.

(*c*) *Visceral injury* —Injuries both of the solid and hollow viscera are accompanied by rigidity This rigidity seems to be brought about in three ways (1) it is a reflex protective measure after the receipt of any wound , (2) it is also brought about by irritation of the peritoneum either by blood or infection , (3) it is largely independent of the amount of peritoneal infection and occurs in extreme form without any naked-eye appearances of inflammation. Under such conditions it is generally accompanied by very great pain

Rigidity often occurs when there is blood in the abdomen the source of which is only a wound of the mesentery or omentum It is not as a rule very marked in these cases and tends to subside with time in distinction to that due to peritonitis, which is progressive One occasionally sees a somewhat rigid and tumid condition of the abdomen in cases arriving late Such a condition is, according to my experience, usually only a sign of hæmorrhage which has been arrested, and I always advise the leaving alone of such cases

Considered clinically, (1) rigidity may be slight, and this generally or local (2) It may be confined to one part and if this spreads it generally means an intestinal lesion. (3) Alternating rigidity During examination the abdomen is sometimes soft and sometimes hard. This is a very puzzling condition and its indication is not very clear , it is sometimes accompanied by extensive injuries (4) Apprehensive rigidity if one may use the term Here although the abdomen looks soft and moves on respiration, it at once hardens when the hand approaches to palpate. As a rule it is accompanied by no serious injury (5) Board like rigidity is most puzzling when accompanied by a slow pulse. If there is extreme pain it nearly always means that there is a wound of the intestine (6) Complete absence of rigidity, this when accompanied with obvious penetration of the abdomen, has often a grave significance, as has been pointed out by Taylor and Meyer Such cases often quickly end fatally It may be here stated that morphia in moderate doses seems to have very little effect on the state of the abdominal wall

The spinal abdomen —One has to be on one's guard not to be misled by the slightly rigid and tumid abdomen which is met with in cases of spinal injury, and especially when such injuries are accompanied by vomiting This state of the abdomen is sometimes caused by a distended bladder, but it may be present without it

Tenderness —This phenomenon has very much the same value as the tenderness met with in penetration of the intestine due to disease *Pain* is nearly always present in some form or another, but it varies from almost uncontrollable agony to nothing more than discomfort There does not seem to be any particular relation between the amount of pain and the amount of injury

Shock

This can be considered under two heads (1) subjective sensations , (2) shock proper

1 *Subjective sensations* —The sensations of a man shot in the abdomen vary in a remarkable degree As can be well imagined the size of the projectile must have a considerable influence The shell fuse cap produces much the same effect as a violent blow from the heels of a horse, although there may be no open wound, and the subsequent course proves that there is no visceral injury A somewhat similar effect may be produced when a portion of the abdominal wall is torn away but as the blow is a more or less glancing one in such conditions the amount of "knock out" effect is often surprisingly little Men have walked considerable distances with such wounds, their intestines supported by a bandage To quote a case —

A man had his abdominal wall ripped open by a bullet just as we were being compelled to evacuate a trench He was bandaged up with a shell dressing, and insisted on walking to a trench in the rear, where he lay on the fire-step for some time until things became quiet and he was able to be taken away to the ambulance He made a complete recovery

Sometimes a man, though he knows that he has been hit in the abdomen is quite unconscious that his intestine is prolapsed, although a considerable amount may be outside his body To quote a case —

A man was hit just above the pubes , he experienced very little inconvenience When the first dressing was applied some of the small gut lay on the belly wall This was covered up with a dressing and the man taken straight to an advanced abdominal hospital When he arrived there he was in good condition and in no pain Six or seven feet of small intestine perforated in places lay under the dressing He made a complete recovery after operation

When the missile is a small one and penetrates and wounds the intestine there may be very little pain or disturbance

One man, hit in the iliac region, in whom a subsequent operation proved intestinal injury, was quite unconscious that he had received a severe wound. He thought that he had been hit in the leg, the bullet having disturbed some of the lumbar nerves

Another man, a bearer in the R.A.M C , who had been wounded in the abdomen and, as subsequent operation proved, in the intestine, was brought on a stretcher to an advanced dressing station, but seeing there were many wounded to be attended to he got up off his stretcher and lent a hand

Another case may be quoted as showing how little disturbance a wound in the intestine may produce It was one of the cases I saw early in the war, and which confirmed my opinion that the expectant treatment was wrong This officer had a side-to-side penetrating wound of the abdomen When I saw him at a clearing station about six hours after receipt of the wound he was in good condition, free from pain, cheerful and smoking a cigarette He was unoperated, he was dead of peritonitis in 24 hours Post mortem he had a single hole in his intestine

On the other hand, a man shot in the abdomen by a bullet or some of the smaller projectiles may experience a tremendous blow which may knock him out Now this sensation of a tremendous blow is experienced even when small missiles hit the limbs It is curious to remember that the blow or kick sensation is experienced by those who rupture muscle fibres while playing games It is therefore legitimate to imagine that the sensations of a violent blow have nothing to do with an injury to the solar plexus

Pain of an intense character is sometimes experienced immediately after the receipt of the wound, and it accompanies wounds both of the upper and lower abdomen In the latter case it was specially connected with penetrating buttock wounds The suddenness of the pain in these cases recalls that seen in perforation of gastric ulcer or appendix This similarity suggests that the cause of pain is connected with an irritation of the peritoneum by the bowel contents although the escape of such matter may not be perceptible at the operation Some people hold that the contents of the jejunum are more likely to cause pain than those of the ileum

The following case is an example of intense sudden pain and a board like rigidity which so often accompanies it It should be noticed that his pulse was only 60

L C was wounded in the back by rifle grenade, he was admitted within four hours of the wound He was pale and suffering intense pain in spite of morphia His abdomen was like a board His distress might have been increased by the fact that, being hit in the abdomen, he was quite sure he had got to die He was taken to the theatre and when examined the only wound found was a small puncture on the outer side of the erector spinæ Operation disclosed one abrasion and three perforations of the jejunum There was no visible escape of contents Recovery was uninterrupted The fragment that caused the injury was no larger than a large safety match head in bulk and so small that its weight could scarcely be appreciated by the hand

2 *Shock proper* —Everyone understands in a general way what is meant by shock and has in his mind a picture of a patient in such a state When asked to define what he really means by shock he will very likely be unable to answer this question As regards the abdomen, a state of clinical shock is produced in various ways—by a violent blow, by multiple intraperitoneal abdominal injuries, by hæmorrhage, by sepsis, which seems to be of the nature of poison shock, and by pain

If a man is hit by a large projectile the blow will produce shock, just as any other blow will do The man is winded or knocked out. Again, extensive injuries of the abdominal wall with exposure of the intestines will cause shock This is also true of multiple injuries of the abdominal viscera, and there can be no doubt that the gravity of any case does rapidly mount with the number of lesions in the viscera and the number of viscera injured Apart from these generalisations, it is very hard to make any definite statement as to the relation between the amount of shock present on the one hand and the organs injured and the amount of individual damage on the other

Some idea of what a man's state may be after a wound in the abdomen has been given when speaking of a man's subjective sensations, and it can be seen from that that immediately after the receipt of the wound that proves fatal a man may for a considerable time be able to pursue what he was doing I might quote here another case as illustrating this

A flying man, well over the German lines, was hit with a high-explosive shell, it entered somewhere behind the anterior superior spine, traversed the abdomen, caused two holes in the small intestine, and then lodged in the areolar tissue behind the pubes The man brought his machine back, made a good landing, and was brought into the casualty clearing station near by in really first-class condition He was operated on, the wounds in the intestines sewn up, and he died within 48 hours of acute sepsis produced from the retroperitoneal tissue

There is considerable difficulty in ascertaining the connexion between the actual damage done and the amount of shock Regimental medical officers who see cases early can form no idea, apart from the loss of abdominal wall or protrusion of viscera, what the extent of the abdominal injury is, and by the time the cases come to operation there are the added factors of loss of blood and sepsis The amount of shock seems to be largely due to the loss of blood, and if one could only find some easy method of supplying this fluid it is possible that our results might be very greatly improved The transfusion of blood although it is a comparatively simple process, is more or less cumbrous and can only be employed when conditions are quiet and when a donor is available

A word may here be said about the effect of lesions on individual organs It has been stated before that in the case of the liver one meets with some cases of shock which do not seem to be explained by the amount of damage or the amount of blood lost Wounds of the spleen, apart from hæmorrhage, even though severe, do not cause much collapse The same can be said of the kidney, and this is perhaps rather remarkable when one remembers the effect of the kidney punch in boxing In some instances there is great shock and a pulse of 140, followed by recovery without operation

The stripping up of the retroperitoneal tissue by blood seems to cause shock out of proportion to the amount of blood lost The great pain of a small injury will often produce pallor and collapse and cold extremities, while the pulse is quiet

There is tremendous scope for the investigation of this subject, and work is being done, notably by Captain Geoffrey Marshall. It is not a question of preventing shock so much as of curing it, for it is impossible to apply the ordinary anti shock procedure to a man before he is wounded The clinical shock produced by sepsis is often very marked and may cause death in a comparatively few hours This, again is well seen in cases that are dying of gas gangrene of the limbs

Care of the Patient before Operation

In transit to hospital —First of all, a man, wounded in the abdomen, is more comfortable if he can be put in such a position that his abdominal muscles are relaxed He should be covered up and kept as warm as possible and saved all the jolting possible, though, from the nature of things, this cannot be done very effectively He should be given a reasonable dose of morphia—this will relieve his pain and mental anxiety It is well to say a word here about the administration of morphia After the first injection has been given a reasonable time should elapse before another dose is administered This warning is necessary because patients have arrived at the casualty clearing station very profoundly under the influence of the drug Not infrequently, too the patient has been dosed either by himself or by his companions without the knowledge of the medical officer

The withholding of water —There is no reason why water should not be given in reasonable amounts, its withholding causes great distress to the patient, who very likely is already suffering from a lack of fluid in his body

In hospital —When a patient arrives at an operating hospital the question of immediate operation has to be considered On the whole, it is better to put the man to bed and watch his condition for a little than immediately to subject him to operation It is quite true that hæmorrhage is the great danger, but, still, my experience has led me to think that on the whole a little rest does more good than harm The interval is used to improve the man's condition.

First and foremost as a remedial measure is the warming of the patient This is by far the best treatment of shock that I know and far transcends in its importance the ministration of stimulants of whatever nature, either by the mouth or hypodermically The radiant electric bath covering the whole body is by far the most efficient method of applying heat, and should be used wherever an electric current is available

Fluid can be introduced into the system by the mouth, subcutaneously or intravenously It just depends upon the state of the patient and his capabilities of reception I would only say that the intravenous method is by far the best and surest and is the only way of any practical use if time is an object The fashionable method of subcutaneous saline is practically valueless in a shocked man Pituitrine is favoured by some people

The actual moment for performing the operation must be left to the individual judgment of the operator If the man does not respond at all, the question must be decided whether to operate at once or whether it is worth operating at all Sometimes even as much as six or eight hours' rest will produce such improvement that an operation is possible where at first the case seemed hopeless

General Lines of Treatment

Cumulative experience shows the wisdom of operation in most cases, and it is now mostly a question of excluding cases on which it is best not to operate It can be frankly admitted that this line of treatment involves operating on certain cases which would have got well without operation It also involves operating on a certain number of cases, such as those in which there is bleeding without visceral injury, which might have got well without operation, but there is no way of telling if the hæmorrhage has stopped except by looking

In a certain number of cases the intraperitoneal hæmorrhage, although the hæmorrhage has ceased and is not immediately fatal, not infrequently leads to intra abdominal abscess later on On the whole it may be said that a policy of "Look and see" is better than one of "Wait and see" It may be useful to enumerate those cases which are best left alone

1 Cases in very bad condition Now there are of course many cases which no surgeon would feel himself justified in operating on, but there are many border line cases which some surgeons would leave and some to whom the surgeon would feel constrained to give the chance of operation. Here the personal equation comes in, and whether he operates or not must be left to the surgeon to decide He should, however, remember the indications of Table IV (Pulse rates) It need only be added here that the bolder surgeon will most probably get a worse operative mortality

2. Cases shot high up in the abdomen and in the liver area on the whole do very well if left alone, so long as there are no symptoms of hæmorrhage , in fact, hæmorrhage is the only reason for operating on liver cases It is, of course, true that a certain number of these succumb to sepsis at the base but their number is not sufficiently great to warrant early interference on that account

3 High abdomino thoracic wounds on the left side The type of wound more especially referred to is that which enters somewhere near the mid line behind and emerges somewhere towards the posterior part of the axilla about the level of the sixth to eighth rib These wounds are sometimes accompanied by symptoms suggesting stomach involvement but on the whole they do not do badly, and operative interference does not afford very much help, as wounds high up in the cardia, or near the œsophagus, are almost impossible to close , or, if they can be reached, involve such disturbances as to be likely to lead to a fatal result

4 Cases arriving late. I am inclined to put down 24 hours as a usual limit within which a primary operation is likely to be successful Hæmorrhage by this time has ceased and operation is only likely to spread infection if the bowel has been perforated and to hasten the end There are some cases in which operation may be thought advisable—namely, those with a fair pulse but with vomiting, and the operation being performed with an idea of getting over the "obstruction" by short-circuiting or an enterostomy The operations that I have seen performed for this reason have nearly all been fatal

The so-called Murphy operation—that of simple suprapubic drainage—is, I believe, an absolutely useless disturbance, and has, I see, been abandoned by the French, with whom it was an official proceeding in the early days

The operation table —The Trendelenburg position should be ready for use Most important is the provision of some heating arrangement on which the patient can lie

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INCISION

1 *Its site* —This must be planned rather with a view of dealing with the probable nature of the injury than with any reference to the wounds With an in and out wound we know the course of the projectile and can form a fair estimate of the organs likely to be involved With a single wound this is practically impossible, and it is here that an X ray apparatus is so valuable, as it enables us to make the abdominal incision in the best possible place.

To give an instance of the value of an X ray apparatus suppose there is a single entry wound near the middle of the abdomen Without an X ray apparatus the only thing is to open the abdomen in the middle line and find out the course of the bullet, and this involves an exploration of the whole abdomen , and in the end it may be found that the only viscus injured is the colon at its peritoneal reflection The exploratory procedure will have exposed the whole abdomen to the danger of contamination On the other hand, an X ray picture would have located the bullet in the loin and shown at once that a horizontal exploratory wound would have met all the circumstances of the case and possibly saved a life

A paramedian incision is the standard method of opening the abdomen and it should be used in all cases unless there is some distinct indication to the contrary It is always better to prolong it than to make lateral right-angle extensions The length should be 6 to 8 inches probably the longer is the better, as free access means a very great increase in celerity

In some antero posterior wounds towards the lateral line of the body a rectus sheath incision has something to recommend it , the colon can be more easily reached and the field of operation limited It is not, however, a good incision to close and it divides many nerves Both the hepatic and splenic flexures can be reached by the rectus sheath incision the hepatic with a good deal more ease however

In those cases where the missile has perforated through the body from near the mid line to the loin whether this direction is shown by an entrance or an exit wound, or by the aid of a skiagram the transverse incision either horizontal or parallel to the upper or lower abdominal limits, has much to recommend it If more room is required it can be obtained by cutting the anterior rectus sheath but leaving the rectus muscle intact Such an incision allows free access to the hepatic and splenic flexures, to the vertical colons, to both kidneys, and to the spleen It also allows a systematic examination of the small intestine, if necessary It is the only incision that allows the ascending and descending colons to be easily and properly repaired and in addition, its posterior extremity is a convenient situation for an artificial anus at the site of the colon wound It is not a convenient incision for the stomach, except for that portion situated near the spleen

A similar incision starting behind and prolonged forward, if necessary, can be used with advantage in exploring lateral wounds of the body in the neighbourhood of the cæcum and sigmoid A subcostal incision is also good in certain liver wounds

In some cases of wounds in the back of the loin it is better to open the abdomen in the mid line and make sure that the peritoneum has not been involved If this is so, the wound is closed and the loin opened up and the necessary steps taken to deal with the condition found It is always very important when there is a possibility of a colon wound, to do everything to prevent contamination of the general abdominal cavity Such horizontal wounds suture easily and heal kindly

2 *Its closure* —The method of closure must depend on the condition of the patient If the condition is critical it must be closed by through and through sutures If there is time an attempt should be made to close the peritoneum separately, as many of these wounds—more than one would like—suppurate, and it is impossible to prevent this suppuration extending to the intestines if the peritoneum is unsutured If the condition of the patient allows it the wound can be closed in layers, but in every case there should be at least three through and through supporting stitches

Suppuration in the operation wounds has been a trouble. It may be partly due to defective technique, but in many cases one has to remember that the blood in the abdomen which must well out when the cavity is opened, is full of micro-organisms , and various methods have been tried to prevent infection but with no great success Of late, however, there seems to have been a certain amount of improvement It is curious that the same condition of things is found on operating on acute appendix abscess, where the peritoneum can readily combat the septic condition in which it is left while the abdominal wound falls a victim to the bacilli

3 *Abdominal drainage* —Opinions differ about this, and personally I never use it myself, nor do I believe that it has any points to recommend it When speaking of abdominal drainage I mean the ordinary drain to the pelvis or flanks It is quite another thing to tie a small local drain to a suture line which one mistrusts, the idea of which is to form a local track in the case of a leak.

4 *Flushing the abdomen* —Some people favour this procedure and it has a good deal to be said for it when the abdomen is full of septic blood At the same time it is difficult to do efficiently without much exposure of the intestines In small local infections without blood it is not to be recommended Both saline and eusol have been used, but to heat the latter to the requisite temperature is to destroy its efficiency The cold produced by ether is sufficient to damn it, even if its use could cleanse the abdomen A small amount used to produce leucocytosis finds favour with some.

POST OPERATIVE TREATMENT

I do not know that there is anything particular to be done to the patient after operation more than is done in ordinary surgical practice after any severe operation The question of infusion or transfusion will naturally arise and in some cases may be beneficial Most people treat their cases in a semi recumbent position As to the administration of morphia, it is better to give it than withhold it if the patient is restless or in pain Most interest turns on the condition of the bowels Castor oil, calomel and pituitrine all have their advocates There can be no doubt that pituitrine is a very fine purgative, especially if injected into the muscles , sometimes it requires to be helped by a glycerine enema Like all other purgatives, it is dependent for its action on a healthy condition of the musculature of the bowels and if this is paralysed either by shock or sepsis it will fail to act, as do other purgatives I am not particularly anxious about the opening of the bowels, and I am fairly convinced in my own mind that the bowels will not give trouble if the case is going to do well, and if the case is not going to do well—and it is mostly a matter of peritoneal sepsis—no purgative is of any real avail I think I have seen a good deal of discomfort needlessly inflicted upon people by attempts to make the bowels act

WOUNDS OF PARTICULAR ORGANS

The Œsophagus

Wounds of the œsophagus are very rarely seen, while wounds of the trachea are not so uncommon The rarity of wounds of this tube must, I think, be due to the fact that antero posterior wounds involve the spine and transverse wounds involve the great vessels Some of the lower thorax wounds, which are accompanied by vomiting, may be wounds of the œsophagus, but there is really no proof of this

One curious case may be quoted where a man was hit in the back about the fourth right interspace He was treated for a thoracic wound as there were no localising symptoms Two days later he passed the core of a bullet and the day following the mantle

Stomach

Organs wounded with the stomach —The thorax is involved in a fair number of cases The organs wounded with the stomach in order of frequency are the small gut, liver, colon, spleen, kidney, pancreas One case may be quoted as showing how complicated these wounds may be In this case the stomach, small gut, transverse colon, and sigmoid flexure were all wounded together The complicated wounds are usually side to side wounds of the body, or such wounds with an up-and down inclination

I have seen one curious case in which the anterior wall was grooved and the spleen and the kidney also wounded This ended fatally A curious fact is the rarity with which wounds of the spleen and the stomach are met with in association, and when so associated are nearly always fatal

Nature of wounds —The stomach affords many types of wound, nearly all easily explained by the nature of the projectile and the course it takes Sometimes the stomach wall is exposed by the carrying away of the anterior abdominal wall At other times prolapse of the stomach takes place, accompanied by that of the colon, small gut, and spleen

Bullets passing in an antero posterior direction make small perforations Shrapnel balls cause larger perforations, the edges of which are more excoriated than is the case with bullet wounds, the larger size and the rounder form of the ball causing a bruising of the wall before it bursts its way through Shell and bomb fragments make wounds commensurate to their size and shape When the axis of the flight of the projectile becomes more or less parallel to the walls of the stomach, the wounds become larger—sometimes a linear slit, sometimes a linear slit followed by a perforation to which the name of "note of exclamation" wound may be given When the projectile passes in through the epigastrium and out by the axilla the slits may become more or less parallel to the greater curvature When the missile passes in about the nipple line and takes a downward and oblique direction towards the right, the wounds are more or less at right angles to the greater curvature, so that the anterior wall of the stomach, or its antral portion, may be almost completely divided

Projectiles hitting the greater or less curvature in an antero posterior direction sometimes cause rather extensive V shaped injuries involving both walls Bruises or cuts in the peritoneum or muscular coats are also met with, and in one case a piece of hard clay which had perforated the spleen was found lying embedded in the stomach wall (Captain J Fraser)

It is important to remember that the posterior wall may be alone wounded or it may be wounded in conjunction with the posterior wall of the transverse colon Both of these wounds may be invisible when the abdomen is opened

The mucous membrane does not pout when the wounds are small, but in the case of linear wounds it becomes extruded just as it does when one incises the stomach wall in doing a gastro jejunostomy The anterior wall is the wall most frequently wounded

Bleeding —Wounds of the stomach are accompanied by very severe hæmorrhage, this is a cause of death in a considerable number of cases The hæmorrhage as a rule, does not come from the actual wall, but from the vessels as they run up and down the surface of the organ The hæmorrhage may take place either into the stomach or into the peritoneum

Possibility of spontaneous recovery —This has already been admitted, and it only remains to be said that a great many of the injuries could not result in this favourable termination

Symptoms —Vomiting is a very constant feature, in fact, the stomach is the only viscus which almost always furnishes this symptom One is often surprised that vomiting is possible with the size of the wound in the organ There is sometimes an escape of gas from the wound, but no particular diagnostic value is to be attached to the presence or absence of liver dullness

Treatment —Operation is to be advised in all cases except those cases already referred to where from the track of the bullet the wound is most probably situated near the œsophageal or upper portion of the cardia. The best incision is a paramedian one As a rule, one can tell if the posterior wall is likely to have been involved If this is the case or if there is any doubt, the posterior surface must be explored through the gastro-colic omentum in the usual way The suture of such wounds may be very difficult, as are wounds of the lesser curvature involving both surfaces There is no need to excise the wounds unless they happen to be very ragged Gastro-enterostomy may be necessary in cases of wounds dividing the antral portion or the duodenum, or in some cases of narrowing of the stomach This should only be done in cases of very evident necessity

Prognosis —The maximum period of successful suture after receipt of the wound is 36 hours and the prognosis depends largely on the amount of hæmorrhage that has taken place and on the association of other wounded organs As was seen in Table I (April 14th, p 566), the mortality mounts very quickly in complicated wounds The amount of peritonitis present does not depend very directly on the length of time between the injury and the operation

Secondary complications —A secondary hæmorrhage has proved fatal in an unsutured wound on the fifth day Major T R Elliot and Captain Herbert Henry have made some important remarks on "After History of Both Operated and Unoperated Gastric Wounds"[2] They showed that sutured and non sutured wounds, and contusions are subject to ulceration, secondary hæmorrhage, and perforation Secondary hæmorrhage occurred on the sixth, twelfth, and fifteenth day respectively, death occurred on the ninth, twenty sixth, and the twenty fifth day, the first from hæmorrhage and the last two from peritonitis Major Elliot thinks that this points to the necessity of careful feeding and especially to the withholding of extractives Subdiaphragmatic abscesses have been met with, but were not common even in the preoperative days, according to Sir George Makins.

Mortality and cause of death —The mortality can be judged from the tables The causes of death are shock and hæmorrhage and peritonitis at a later period The occurrence of many deaths from hæmorrhage teaches the lesson that stomach wounds cannot be considered as innocuous

The Small Intestine

Frequency —The small gut was perforated in 363 cases in 965 operations It is wounded by itself or in conjunction with nearly all other organs but especially with the colon and stomach and bladder

Character of the wounds —The character of the small gut wounds varies in some degree with the projectile that caused them but not to the extent that one might expect A bullet may inflict as severe an injury as a piece of high-explosive shell It used to be thought that a patient shot with a bullet had a better chance than one injured by a shell fragment The present war has proved this to be a mistake As a matter of fact, the least severe wounds are caused by the small bomb fragments The greatest number of lesions was 20, in a man who made a good recovery after resection of 6 ft The greatest number of lesions sewn up successfully was 14

Bullet injuries —The injury may be complete or incomplete—i e it may open the lumen or it may only excoriate bruise or tear the outer coats The most common injuries are the perforations made by the bullet striking the intestine at right angles to its long axis Here there are two perforations through which the mucous membrane pouts to form a small round rosette Some holes are said to be so small as hardly to admit a bullet, and in such holes the mucous membrane does not pout Apparently, as the flight of the bullet becomes more inclined to the transverse or long axis of the gut the perforations become slits but there are still two separate wounds These wounds gape somewhat, and the mucous membrane overlaps the cut muscular coat, so that a considerable mucous surface meets the eye The general appearance still suggests a rosette The two slits may enlarge until the continuity of the intestine is only maintained by two narrow strands of the wall.

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[2] Brit. Med Jour April 8th 1916

In other cases there is only one wound involving different portions of the circumference of the intestine, it may reach from near the mesenteric border to near the free margin or involve the free margin only In other cases the free margin is slit right back to the mesenteric border, so that only a narrow strip of wall remains It is remarkable that the last piece to be divided is usually the attached portion Here there is a wide gaping wound with an extensive exposed mucous surface In extreme cases the gut is completely divided In another extreme form of injury the intestine is only represented by a long narrow strip of bowel, its appearance suggests that some animal had gnawed or worried it

The explanation of the transverse direction of the lesions is to be found in the looped arrangement of the small intestine whereby a greater part of the tube lies in a vertical direction As a man is usually shot either from side to side or from before backwards, the missile will usually hit the intestine at right angles If the bullet takes an up-and-down direction one meets with longitudinal lesions of the gut

Shell fragments —Shell fragments cause wounds of all varieties generally commensurate to their size

Shrapnel balls —These cause large ragged perforations and tears

Bombs —Bomb injuries often cause small multiple wounds and the same may be said of small fragments of high-explosive shell or a disintegrated bullet

The cause of the eversion of the mucous membrane is, on the one hand due to the redundancy of the mucous membrane and also apparently from an examination of microscopic sections to a retraction of longitudinal coat (Captain J W McNee and Captain J S Dunn) Microscopic examination of the wounded edges also shows that the lesion is a very local one, in fact the appearances are no more than one would expect to see if the intestines had been cut with a pair of scissors—it usually consists of a blood infiltration in the neighbourhood of the wound Mucous membrane stains well and distinctly right up to the very tear

As many as 20 injuries may have to be dealt with. They may be even or uneven in number and when uneven the projectile is often found within the gut or, if even it may still be found lying in the last hole of exit. Very often the projectile is never found remaining lodged in the body, or it may be passed per anum As a rule the injuries are found fairly close together but if multiple they may involve a long extent of the intestine (9 ft). In a few cases small lesions are distributed over the total length of small intestine Sometimes a knuckle of gut is prolapsed and even strangulated in the abdominal wall Sometimes the exposed knuckle is perforated at other times it is intact but there are perforations within

Symptoms —There is nothing more to be added to that which has been said under the heading of "Diagnosis of Intraperitoneal Damage

Treatment —A long paramedian incision is the rule, except in those cases which have been dealt with when the site of the incision was discussed. The actual operative technique in the abdomen is as follows If present the blood must be got rid of and the bleeding stopped As a rule the whole length of the small intestine must be explored with the possible exception of those cases of side-to-side wounds involving one half of the abdomen where a transverse incision shows that the colon has been involved alone If there is no blood and the length of the missile s track can be seen it may be possible to exclude small gut injury The cæcum or duodeno jejunum junction is first picked up and brought out of the wound, then the intestine is inspected taking care to look at both sides, and the examined part is replaced within the abdomen. If a small hole is found and the gut beyond it for 6 or 8 inches is intact the hole is sewn up one suture being as a rule, sufficient If the next lesion that is encountered is a small one the process may be repeated If however, the first lesion is a large one it is better to cover it up with gauze and a clamp and to proceed with the examination of the whole length, because a big lesion, if quickly followed by another, may necessitate resection, and the amount to be resected can only be determined when the total injuries are known

When the small intestine has been dealt with the stomach is explored if there is any likelihood of its being injured, and the colon is dealt with last of all, as it is here that an artificial anus may be very likely necessary If a horizontal incision is used it may be better to deal with the colon first, as thereby soiling of the peritoneum is minimised

Turning to the question of suture *versus* resection, it may be said that small and discrete injuries mean suture, while multiple or severe injuries, especially if close together, mean resection Resection is also necessary if four inches of the mesentery is destroyed or infarcted. In some cases double resections have been necessary where there were two badly injured portions of the intestine lying far apart.

I would advise that suture be practised on every possible occasion, even if there are two or three almost complete gashes, provided they are not too close together and so long as the gut remains undivided It is better to narrow the gut somewhat than do a resection The general tendency amongst operators has been to abandon resection

Circular versus *lateral suture* —It may be said that this old controversy is still unsettled, opinion sways backwards and forwards, and I cannot see from statistics that we have got that there is any difference. If lateral anastomosis is practised the lateral openings should be made a little way from the divided ends, because it is these divided ends which last recover their motility

Primary short-circuiting or enterostomy —The idea of these operations is to relieve the upper segment of the bowel which is liable to dilatation from a nervous or septic cause It has by no means found universal acceptance, and I myself should not recommend it as a primary measure—it may be useful in some of the later operations Naturally a small gut anus is to be avoided whenever possible, but it may be the only thing to do

Treatment of a prolapsed knuckle —In the early days there was some difference of opinion on what was the best treatment for this condition Nowadays with the establishment of the operative treatment there is no doubt that the right thing to do is to open the abdomen and deal with the lesions which are found.

Prognosis —In the first instance one may say at once that wounds of other organs increase the gravity of the prognosis Wounds of the duodenum have been so far very fatal, but with this exception there does not seem to be any difference between the jejunum and the ileum Possibly it is more important to take greater care with the suture line in the case of the jejunum in consequence of the presence of bile and pancreatic fluid Some people think that the jejunal contents are more irritating and cause greater pain than those of the ileum

Time factor —This has been already dealt with and it only need be again mentioned that hæmorrhage is a great bugbear and causes early deaths It may also have a distinct bearing on the later deaths from peritonitis by spreading infection in the abdomen As regards sepsis, to judge from the peritonitis present, it may have made considerable headway in four hours and may be practically absent after 26 hours As regards prognosis, more stress is to be laid on paralytic distension of bowel than on the amount of lymph or fluid effused

Mortality and causes of death —The mortality can be seen from the general table at the end of Lecture III Death, when it occurs in a few hours is due to shock and the results of hæmorrhage When it occurs later it is caused by peritonitis which usually ends fatally between the third and fifth day

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BRISTOL ROYAL INFIRMARY —At the annual meeting the medical report showed that 4455 military in patients were admitted to this institution In addition, 3733 in patients were treated, being an increase of 252 compared with 1915 The out patients numbered 48 944 The financial statement showed the ordinary income was £15 472 and the ordinary expenditure £23 976. Bequests amounting to £40 891 had been received, being £35,586 more than in the previous year The debt on the institution was now £14,802

STUDIES IN WOUND INFECTIONS

ON THE QUESTION OF BACTERIAL SYMBIOSIS IN WOUND INFECTIONS

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FOR many years it has been recognised that one species of micro organism may exercise a helpful action on the proliferation of another when the two are grown together in the same culture medium Earlier examples of this type of symbiosis—the term usually applied to this phenomenon—are (1) the growth of an anaerobic bacillus in association with an aerobe, (2) the growth of such a bacillus as *B influenzæ* in association with either staphylococcus or *B xerosis*

With regard to the first example given above in which an aerobic micro organism enables an anaerobic one to grow freely, the explanation usually given is that the aerobe in its growth absorbs the oxygen, thus making the conditions favourable for the proliferation of the anaerobe This principle has been frequently employed in the cultivation of anaerobes and numerous ingenious methods have been devised for thus utilising the oxygen absorbing properties of *B subtilis* and other bacteria

In respect to the second example given in which the growth of *B influenzæ* is assisted by the presence of another micro organism such as staphylococcus no such simple explanation can be given, but it is certain that the staphylococcus furnishes a substance which enables the influenza bacillus to flourish on a medium on which it will not grow alone and also enables it to maintain its vitality for long periods

In connexion with septic wounds of the present war the question of symbiosis may assume very considerable importance In all these wounds the bacterial flora is a varied one consisting as it does of anaerobic and aerobic, spore bearing and non sporing bacteria As has been shown by Fleming,[1] the primary infection of the wounds is a fæcal one At first there is a phase in which the anaerobic spore bearing bacilli (*B perfringens* and organisms of putrefaction) flourish together with streptococci, *B proteus*, and diphtheroids The anaerobic bacilli as time goes on gradually disappear, and ultimately there remain streptococci, staphylococci, diphtheroid organisms, and, at times, *B proteus*

The microbes (apart from *B tetani*) which directly cause the most serious infections are in the early stages of the wound, *B perfringens*, possibly *B malignant œdema* and streptococci while in the later stages streptococci are responsible for almost all the serious complications Although the other microbes do not usually cause serious complications, their presence in the wound becomes an important matter if it can be shown that they may act as symbiotic stimulants to the growth of the more dangerous members of the bacterial flora The experiments detailed below indicate that this is the case

In order to approximate the conditions of the experiment to those obtaining in wounds the culture medium usually employed was human serum, either unaltered or serum to which sufficient trypsin had been added to neutralise the antitryptic power The *raison d'être* of this procedure was that Wright has shown that, according to their situation the bacteria proliferating in a wound have two varieties of culture media from which they obtain their nutriment

(i) Those proliferating in the cavity of the wound are supplied with a fluid medium which consists of the blood fluids altered to a varying degree by the breaking down of the extravasated leucocytes—a process which leads to the liberation of a large amount of trypsin According to the amount of trypsin thus set free the antitryptic power of these blood fluids is either diminished, completely neutralised, or the resulting fluid is even—and this is by no means an unfrequent stage—rendered strongly tryptic All these changes render the blood fluids a much more suitable pabulum for bacteria, for it has been shown that neutralisation of the antitryptic power of the blood serum completely destroys all the antibacterial properties of the blood and the presence of free trypsin together with albumens obviously leads to the formation of digestion products which are the best of all foods on which to cultivate bacteria

(ii) Those bacteria proliferating in the lymph spaces of damaged but still living tissues are bathed in a fluid consisting of lymph altered to a much slighter extent, according to the time it has been exuded from the vessels, the number of leucocytes it contains and other, at present, unrecognised factors

PART I —*Do the Other Microbes Present in a Wound Aid the Growth of* B perfringens *?*

Fleming[2] in some preliminary experiments has shown that staphylococci, streptococci, and *B proteus* when grown in association with *B perfringens* caused an increased growth of this latter micro organism

Before proceeding to give the details of the various experiments the following points concerning the growth of *B perfringens* in culture should be mentioned

B perfringens when planted into fresh serum and incubated under anaerobic conditions will only grow when the sowing is a heavy one

Wright has shown that if the antitryptic power of the serum is neutralised by the addition of trypsin or its alkalinity is neutralised with an acid growth occurs with a much lighter sowing

When growth takes place in serum a very large quantity of gas is formed, so that four to five volumes of gas may be produced from one volume of serum This circumstance affords a convenient index of the presence and also of the amount of growth

Experiment I Influence of staphylococci and streptococci on growth of B perfringens *in milk* —A broth culture of *B perfringens* was diluted with broth 10-fold, 100-fold, and by 10-fold steps to a million fold dilution 40 c mm of each dilution was planted into (*a*) milk 1 c c , (*b*) milk, 1 c c + 20 c mm staphylococcus broth culture, (*c*) milk, 1 c c + 20 c mm streptococcus broth culture These tubes having been incubated for 24 hours were examined for growth which was indicated by the formation of the typical clot and gas formation The results are shown in Table I —

TABLE I

No of tube and micro organisms planted	Dilution of *B perfringens* broth cultures					
	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$
(*a*) *B perfringens* only	Gr	Gr	0	0	0	0
(*b*) + staphylococcus		,	Gr	Gr	Gr	Gr
(*c*) + streptococcus						

Gr = growth

Experiment II Influence of diphtheroid bacilli on growth of B perfringens *in serum (with and without the addition of trypsin)* —In this experiment pieces of 6 mm bore glass tubing about 15 cm long and sealed at one end were used as culture tubes Into these miniature test tubes the culture materials and micro organisms were introduced and then melted vaseline was run on to the surface to form a column about 2 5 cm high The index of growth was gas formation evidenced by the vaseline being pushed up the tube Dilutions of *B perfringens* broth culture having been made as in Experiment I , 10 c mm of each was planted into 300 c mm of serum Another 10 c mm of each dilution was planted into a similar tube of serum which had been thickly sown with a diphtheroid bacillus The experiment was then repeated, using serum to which sufficient trypsin had been added to neutralise the antitryptic power The results are shown in Table II

TABLE II

No of tubes and micro-organisms planted	Dilution of *B perfringens* culture							Culture medium
	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$	
(*a*) *B perfringens* alone	Gr	Gr	0	0	0	0	0	TS
(*b*) + diphtheroid			Gr	Gr	Gr	Gr	Gr	
(*c*) *B perfringens* alone	0	0	0	0	0	0	0	US
(*d*) + diphtheroid	Gr	Gr	Gr	Gr	Gr	Gr	Gr	

Gr = growth TS = trypsinised serum US = unaltered serum

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[1] THE LANCET 1915 ii 638

[2] THE LANCET 1915 ii 376

Two and a half hours after planting these cultures showed gas formation in the first tubes of series (*b*) and (*d*) and in four hours the amount of gas produced in the first tube of series (*b*) was equal in bulk to the culture fluid Such rapid gas formation has not been noted under any other condition

Experiment III Do all the diphtheroids commonly present in wounds stimulate the growth of B perfringens *to the same extent?*—Fresh human serum was divided into portions and each portion was planted thickly with a strain of a diphtheroid bacillus The diphtheroid bacilli employed were representatives of the various groups frequently found in wounds

Two hundred and fifty c mm of the serum containing the diphtheroid bacillus were distributed into miniature test-tubes, as described in Experiment II, and to each were added 50 c mm of dilutions, as shown below, of a *B perfringens* broth culture (four days old) Vaseline was then poured on the top of the fluid and the tubes were incubated for five days The results are given in Table III. —

TABLE III

Strain of diphtheroid used	Dilution of *B perfringens* culture			
	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$
Forrest V ..	Growth	Growth	0	0
Cation I			0	0
Ford I			0	0
Ryan I. ..			Growth	0
Beavan I ..			0	0
Moore III			0	0
Beavan IV			Growth	0
Pretty V				0
Driscoll II			0	0
Control*	0	0	0	0

* Without diphtheroid *B perfringens* only

From the above table it will be seen that these diphtheroids all stimulate the growth of *B perfringens* in serum and approximately to the same extent

Experiment IV Influence of a coliform bacillus and B proteus *on growth of* B perfringens *in serum*—Similar small tubes to those used in former experiments were filled in as follows —

Tube A Serum 1 c c + *B perfringens* emulsion 10 c mm
B Serum 1 c.c + *B perfringens* emulsion 10 c.mm + coliform bacillis emulsion 10 c.mm.
C Serum 1 c.c + *B perfringens* emulsion 10 c mm + *B proteus* emulsion 10 c.mm.

These tubes were incubated anaerobically for 18 hours and the number of *B perfringens* estimated by counting against the number of the red blood corpuscles (Wright's method) The results obtained were as follows —

B perfringens per c c Tube A, 62 millions, Tube B, 146 millions, Tube C 357 millions

Experiment V To ascertain, when two microbes are grown in symbiosis, whether both are stimulated to increased proliferation—The micro-organisms employed in this experiment were *B perfringens* staphylococcus, and streptococcus Miniature test tubes containing 1 c c of the fluid from an ovarian cyst were planted with cultures as shown below After incubation under anaerobic conditions for two days, the number of microbes was estimated by counting them against the number of red blood corpuscles in a film (Wright's method) and also in the case of the aerobic micro-organisms, by diluting and planting a known quantity of a dilution on to plates which were then incubated under aerobic conditions the resulting colonies being counted after a suitable interval The results are given in Table IV —

TABLE IV

No of tube	Micro-organisms planted into the ovarian cyst fluid *	No of microbes per c c estimated by Wright s method after incubation	No of cocci obtained by plating 20 c mm of the fluid diluted 600 fold after incubation
I	*B perfringens* emulsion	360 million	—
II	*B perfringens* emulsion + staphylococcus emulsion	*B perfringens* 433 million staphylococcus 800 million	Innumerable colonies of staphylococcus
III	Staphylococcus emulsion	400 million	About 1500 colonies †
IV	*B perfringens* emulsion + streptococcus emulsion	*B perfringens* 620 million streptococci 1 0 million.	265 colonies of streptococcus
V	Streptococcus emulsion	50 million	colonies of streptococcus

* In each instance 10 c mm of emulsion was planted
† Certainly less than half the number of colonies obtained from Tub II

This experiment shows conclusively that when *B perfringens* is grown in symbiosis with either staphylococcus or streptococcus the stimulation to increased growth is mutual to both species of bacteria

Experiment VI Influence of streptococci and staphylococci on the growth of B perfringens *in serum*—In this experiment the technique was modified by growing the cocci in serum for three days before planting the *B perfringens* Three small test tubes, each containing 1 c c serum, were taken, one was planted with streptococcus, another with staphylococcus, while the third was left uninoculated All three tubes having been incubated together anaerobically for three days an equal amount of *B perfringens* culture was added to each After a further incubation for 18 hours the number of *B perfringens* were estimated by Wright's method

Tube I (staphylococcus + *B perfringens*) contained 120 million *B perfringens* per c c.
II (streptococcus + *B perfringens*) contained 430 million *B perfringens* per c.c
III (*B perfringens* only) contained 62 million *B perfringens* per c c

The above experiments show that the growth of *B perfringens* is greatly increased when it is grown symbiotically with either streptococcus, staphylococcus, or various diphtheroid bacilli It might be argued, however, that this increased growth was simply due to some simple action such as the neutralisation of the alkalinity or the antitryptic power of the serum, both of which as mentioned above have been shown by Wright to aid the growth of this bacillus The following experiment shows, however that the beneficial action of symbiosis with streptococci, diphtheroid, and a coliform bacillus is just as marked in the case when the serum, employed as culture medium has previously been neutralised either in respect to its alkalinity or its antitryptic power

Experiment VII—The technique employed was similar to that used in Experiments II and III

TABLE V

Series A—In this series the culture medium consisted of serum 7 parts and distilled water 2 parts

Micro-organisms planted	Dilutions of *B perfringens* culture						
	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$
1 Control *B perfringens* only	Gr	0	0	0	0	0	0
2. Diphtheroid bacillus + *B perfringens*		Gr	Gr	Gr	Gr	Gr	0
3 Streptococci + *B perfringens*					0	0	0
4 Coliform bacillus + *B perfringens*					Gr	Gr	Gr
5 *B pyocyaneus* + *B perfringens*						0	0

Series B—In this series the culture medium consisted of serum 7 parts and HCl N/10 2 parts (this amount of acid just neutralised the alkalinity of the serum)

Micro-organisms planted	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$
1 Control *B perfringens* only	Gr	0	0	0	0	0	0
2 Diphtheroid + *B perfringens* ..		Gr	Gr	Gr	0	0	0
3. Streptococci + *B perfringens*					Gr	Gr	Gr
4 Coliform + *B perfringens*							

Series C—In this series the culture medium consisted of serum 7 parts trypsin solution diluted 6 times, 2 parts

Micro-organisms planted	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$
1 Control *B perfringens* only	Gr	Gr	0	0	0	0	
2 Diphtheroid + *B perfringens* ..			Gr	Gr	Gr	Gr	0
3 Streptococci + *B perfringens*							Gr
4 Coliform + *B perfringens* ..							
5 *B pyocyaneus* + *B perfringens* ..							0

Gr = Growth and refers only to growth of *B perfringens* as evidenced by gas formation in serum

PART II.—*Do the Various Micro-organisms Commonly Found in Wounds Favour the Growth of Anaerobic Bacilli other than* B perfringens?

Experiment VIII Influence of streptococci on the growth of the bacillus of malignant œdema in serum—A broth culture of malignant œdema was diluted by ten fold steps up to a million fold dilution Of each of these dilutions 40 c.mm were planted into a series of tubes containing 1 c c of serum and also into a series containing 1 c c of serum previously planted with streptococci Vaseline was poured into the tubes to make a column 2 5 cm high and the tubes were then incubated at 37° C for five days The results then were as shown in Table VI —

TABLE VI

Series of tubes	Dilution of broth culture of malignant œdema						
	1	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$	$\frac{1}{100000}$	$\frac{1}{1000000}$
(A) Without streptococcus	0	0	0	0	0	0	0
(B) With	Gr	Gr	Gr	Gr	Gr	Gr	Gr

Gr – *growth*

Experiment IX Influence of diphtheroid bacilli, streptococci, and staphylococci on the growth in serum of the bacillus of malignant œdema and B Hibler IX —A quantity of serum was divided into two portions, one of which was implanted with the bacillus of malignant œdema, the other with *B Hibler IX* These implanted sera were now distributed in two series of minute test-tubes, 0 2 c c being added to each One tube of each series was kept as a control, the others being further implanted with a different micro organism Melted vaseline was now poured on to the surface of the fluid and the tubes were incubated at 37° C After varying intervals the tubes were examined for growth of the anaerobic bacillus which was demonstrated by the formation of gas The results are shown in Table VII —

TABLE VII

Other micro-organism planted	Serum planted with the bacillus of malignant œdema			Serum planted with *B Hibler IX*		
	Time of incubation in days—					
	3	5	9	3	5	9
None	0	0	0	0	Gr	Gr
Diphtheroid No I	Gr	Gr	Gr	Gr	"	"
No II	"					
Streptococcus fæcalis						
Staphylococcus				0	"	

From these two experiments it is seen that the ordinary non sporing microbes found in wounds greatly stimulate the growth of the malignant œdema bacillus and *B Hibler IX*, both of which have been said to cause gas gangrene

PART III —*Do the Other Microbes Commonly Present in a Wound Favour the Growth of Streptococcus?*

As streptococcus is the cause of many of the complications, such as cellulitis or septicæmia which occur even in the earlier stages of wounds and, in the later stages, is the one markedly pathogenic microbe, with the exception of staphylococcus, that is almost constantly present, any condition which favours its growth must be at once recognised as of great importance In the earlier stages the associated microbes are usually *B perfringens* putrefactive anaerobic bacteria *B proteus*, and diphtheroid bacilli, while in the late stages it is associated with diphtheroid bacilli, *B proteus*, and staphylococci

Throughout these experiments in determining the amount of streptococcal growth the total number of cocci were counted by Wright's method or the number of living cocci were estimated by diluting the culture and plating out a known quantity of a dilution on an agar plate

Experiment X Influence of B perfringens *on the growth of streptococcus*

Tube I 1 c c fresh human serum planted with 10 c mm. streptococcus emulsion
II 1 c c fresh human serum planted with 10 c mm streptococcus emulsion + 40 c.mm *B perfringens* broth culture

After incubation for 18 hours under anaerobic conditions the number of streptococci was counted by Wright's method

Tube I (streptococcus only) contained 100 million streptococci per c c.
II (+ *B perfringens*) 360

Experiment XI Influence of B perfringens *on growth of staphylococci and streptococci* —Four tubes, each containing 1 c c of serum, were taken Two of them were planted with *B perfringens* the other two remaining unplanted After all the tubes had been incubated together for 24 hours under anaerobic conditions an equal quantity of staphylococci culture was planted into one of the unplanted tubes and into one of the *B perfringens* cultures The remaining tubes were similarly planted with streptococcus. After having been incubated under anaerobic conditions for 24 hours each culture was diluted 1000-fold with broth, and 10 c mm of this dilution was distributed on to the surface of an agar plate These plates were incubated under aerobic conditions, and the resulting colonies of streptococcus or staphylococcus were counted The results are shown in Table VIII —

TABLE VIII

Tube I (*B perfringens* + staphylococcus) gave about 600 colonies of staphylococcus
II (Staphylococcus only) gave 64 colonies of staphylococcus
III (*B perfringens* + streptococci) gave about 1000 colonies of streptococci
IV (Streptococci only) gave 1 colony of streptococci

When it is considered that both streptococci and staphylococci grow much more readily in unaltered serum than *B perfringens* this enormous stimulation of growth is all the more surprising

Experiment XII Effect of diphtheroid bacillus on growth of streptococci —Into each of three small test-tubes 1 c c of serum was placed To the first was added 10 c mm of 1000-fold diluted broth culture of a streptococcus, to the second 10 c mm of 1000-fold diluted broth culture of a diphtheroid bacillus, and to the third 10 c mm of the 1000-fold diluted streptococcus culture and 10 c mm of the 1000-fold diluted diphtheroid bacillus culture The number of living micro organisms in each tube was then estimated by plating out a known quantity on agar and counting the resulting colonies The three tubes were then incubated for 10 hours at 37° C, after which the number of living micro-organisms was again estimated by the same method. The results are given in Table IX —

TABLE IX

No of tube and implantation *	Content of living streptococci per c.c		Content of living diphtheroid bacilli per c.c	
	At time of planting	After 10 hours incubation	At time of planting	After 10 hours incubation
1 Streptococcus culture	13 000	2,800 000	—	—
2 Diphtheroid culture	—	—	2000	5,300,000
3 Streptococcus culture and diphtheroid culture	13 000	120 000 000	2000	2,600,000

* In each instance 10 c mm of broth culture diluted 1000-fold

This experiment shows a very great increase in the numbers of streptococci in Tube 3 where streptococci are grown in association with diphtheroid bacilli In this tube there was after 10 hours more than 40 times as many streptococci as in an exactly comparable tube where the streptococcus was grown by itself

Association with streptococci did not appear to favour the growth of the diphtheroid bacilli, on the other hand it seemed to retard it, as there were only half the number of living diphtheroid bacilli in the tube containing the mixed culture as there were in the tube in which the diphtheroid bacillus only had been grown

With regard to the mechanism by which the aerobic organisms help the anaerobes the following *experiment* is of interest

Experiment XIII —An ordinary broth culture tube was incubated with a diphtheroid bacillus such as is commonly found in wounds The cotton wool plug was cut off short and pushed a little way down the tube Melted vaseline was now poured on the plug so as to soak into it and to leave a layer of vaseline about 0 5 cm thick on the top The tube was put in the incubator, and when it had reached incubator temperature a mark was made at the upper level of the vaseline As oxygen was absorbed from the tube so the vaseline was sucked down, and at intervals marks were made corresponding with the level of the vaseline

The height of the column of air in the tube was 87 mm

In 6 days the vaseline was sucked down 7 5 mm = 0·09 of total volume
In 10 " " 13 5 mm = 0·15
In 4 months 17·5 mm. = 0·2

We see, then, that ultimately the amount of gas absorbed was 0·2 of the total volume, which corresponds with the amount of oxygen in air, and the absence of oxygen was confirmed by the introduction of pyrogallic acid and caustic soda, when no further absorption took place and no brown colour was produced

Further experiments showed that staphylococcus, streptococcus *B pyocyaneus*, and some coliform bacteria absorb oxygen to a greater or less extent during their growth

While this oxygen absorptive power may play some part in the symbiotic action of aerobic bacteria on the anaerobes yet it cannot be the only explanation as the experiments cited above show that the stimulant action of the "aerobic" bacteria is exercised when the cultures are grown under absolutely anaerobic conditions

Summary and Conclusions

Part I.—The experiments described show that —

(i.) The proliferation of *B perfringens* is much more rapid when it is grown in symbiosis with streptococcus, staphylococcus, various diphtheroid bacilli, *B proteus*, *B pyocyaneus*, and a coliform bacillus

(ii) Such increased growth occurs equally well when the culture medium consists of fresh serum or of serum which has been neutralised either in respect of its alkalinity or its antitryptic power, indicating that the increased proliferation in fresh serum cultures is not due to either of these changes taking place.

(iii.) All strains of diphtheroid bacilli, commonly isolated from wounds, were found to be practically equally efficient in stimulating the growth of *B perfringens*

(iv) Not only were a much larger number of *B perfringens* found in the cultures grown in symbiosis with these various bacilli after a certain period of incubation, but it was also found that an almost infinitely smaller number of *B perfringens* would proliferate under these conditions than when pure cultures were made

(v) When *B perfringens* and streptococci are grown in symbiosis a much more abundant growth of *both* microbes results

Part II—The experiments detailed show that —

(vi) Nos (i) (ii.) and (iv) of the above conclusions applied equally when the bacillus of malignant œdema or *B Hibler IX.* was substituted for *B perfringens*

Part III—The experiments described show that —

(vii.) *B perfringens* when grown in symbiosis not only with streptococci, but also with staphylococci leads to an enormous increase in the number of cocci found in the culture

(viii) Streptococci grown in symbiosis with diphtheroid bacilli gave a much more abundant growth than when grown in pure culture. The growth of the diphtheroid bacilli in the mixed culture was, however, 50 per cent less than in the pure culture

(ix.) The final experiment shows that diphtheroids and many other bacilli have the power of absorbing oxygen to a greater or less extent during their growth, but that this property will not account entirely for the increased proliferation that occurs, when aerobes and anaerobes are grown in symbiosis, since similar mixed cultures placed under anaerobic conditions show quite as marked an increase of growth

These experiments indicate that bacterial symbiosis may play a very important role in wound infections For as regards gas gangrene which is caused by the invasion of the tissues by certain anaerobic bacilli, the commonest being the *B perfringens* it is well known that very large doses of pure cultures of this bacillus have to be inoculated into animals in order to produce this disease with certainty, again Wright has shown that to obtain a growth of this bacillus in serum a very heavy implantation is necessary but if the serum is altered by neutralisation of its alkalinity or its antitryptic power a very much smaller sowing will produce an abundant culture From these experiments he concluded that the conditions leading to such an alteration of the blood fluids play an important part in the production of gas gangrene.

Taking these facts into consideration, together with many of the clinical aspects of gas gangrene it would seem apt to compare the action of *B perfringens* in the production of this disease with a high explosive which is comparatively harmless until the explosive action is started by a detonator Keeping this simile in view it is obviously of the utmost importance to ascertain those conditions which act as 'detonators' in the growth of this bacillus and the experiments detailed above show that over and above those factors which have been described by Wright there is another—namely symbiosis—and that this is in *in vitro* experiments the most important as yet described since the growth of *B perfringens* obtained in serum under such conditions is not only much more rapid in development and more copious in quantity, but also follows the lightest implantations

These results would, for example explain the occurrence of gas gangrene in those cases where the number of bacilli introduced into the wound at the time of its infliction was comparatively small They would also explain the frequent occurrence of gas gangrene in those cases in which after a thorough cleansing and opening up of the wound—a procedure which should reduce the infection to a minimum—free drainage is prevented either by suture or unsuitable dressings Again these experiments would explain the almost "explosive" onset of gangrene in some of the severe, heavily infected wounds for the results obtained in Experiment II, in which, within four hours, gas equivalent to the volume of the serum used as a culture medium was produced, indicate a rate of growth which has never been approached under any other conditions

These experiments show also that the streptococci multiply much more rapidly when grown in symbiosis with various bacteria, amongst these being the group of diphtheroid bacilli which are present in practically every infected wound from the earliest stage until cicatrisation is complete Such being the case it is very probable that symbiosis plays an important part in the production of cellulitis and similar complications due to streptococci occurring in the earlier stages of the wound, and also accounts for the common occurrence of the severe inflammatory reactions which so frequently follow operative interference in the later stages of the wound

CLINICAL TYPES OF SUBTERTIAN MALARIA

AS SEEN IN SALONIKA IN SEPTEMBER, OCTOBER, AND NOVEMBER, 1916

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DURING last September, October, and November we had an opportunity of seeing over 3600 cases of malaria. The diagnosis of malaria has been founded either on a positive blood finding or on the history of the case, temperature chart, and a definitely hard palpable spleen In a small proportion of the cases other infections were present in addition In isolated cases a double infection with subtertian and quartan parasites was found Owing to the fact that in some 40 per cent. of the cases we were unable to demonstrate the parasites in the peripheral blood stream we are not in a position to give exact figures of the relative amounts of benign and subtertian infections, but there can be no doubt that during this period the percentage of subtertian infections was very high. The relatively high proportion of the negative blood finding is due to the fact that practically all the patients were under the influence of quinine on admission to the hospital and many of them had been several days under hospital treatment before admission to a base hospital. Further, owing to pressure on beds it was generally impossible, in the less severe cases, to make more than one blood examination.

The majority of the cases were of the simple subtertian, double subtertian and irregular types of subtertian pyrexia without local manifestations These cases uniformly responded well to treatment with quinine The most important group of cases with local symptoms on account both of relative frequency and of difficulty of differential diagnosis were characterised by more or less urgent gastro-intestinal symptoms This group could be separated into several more or less definite types

Dysenteric—A large number of the cases were sent into hospital with a diagnosis of dysentery A prominent symptom was the presence of diarrhœa. The great majority of the patients stated they were passing "blood and slime," but this is a mere formula with most of them and of no value in diagnosis. In most of these cases the stools were fluid and fæculent without definite blood or mucus, and they varied in number from 6 to 15 or more in 24 hours These cases rapidly improved under quinine. In a smaller number of cases the stools contained definite blood and mucus It was possible in the great majority of these cases to demonstrate a superadded infection with one of the organisms of the dysenteric group In a few other cases patients admitted with malaria but without dysenteric symptoms developed genuine bacterial dysentery, and again cases with bacterial dysentery, after a few days in hospital, showed genuine malaria with protozoa in the blood In a few cases where the diarrhœa tended to persist concurrent infections with *Lamblia intestinalis*, *Tetramitus*, *Trichomonas* and *Balantidium coli* were demonstrated Apart altogether from these cases there were a considerable number of patients admitted whose dominant symptom was diarrhœa, and in whom repeated examinations of the stools failed to demonstrate any dysenteric organisms or amœbæ Several of these cases died, and the autopsy showed, in some, slight congestion of the colon, chiefly in its upper part, in others, definite small submucous hæmorrhages, and in one, to be described in detail, extensive submucous hæmorrhages, but a perfectly intact mucous membrane In many of these cases the bowels moved at first from 20 to 30 times a day The stools were liquid, fæculent, and not unlike Worcester sauce In the majority this diarrhœa very speedily subsided under energetic quinine treatment In some the stools were fæcal, liquid, more or less heavily tinged with blood, and, very characteristic, notably bile-stained This stool, although containing blood and traces of mucus, is yet macroscopically quite distinct from the typical dysenteric stool As examples of those types we may quote the following cases —

Corporal F, aged 32, admitted on Sept 20th, 1916, with profuse diarrhœa and pyrexia The bowels were moving about every hour, stools fluid, fæculent, and heavily tinged with bile and blood Spleen enlarged and hard, blood film showed very heavy infection with subtertian parasites of all types, rings, rosettes, and crescents He was treated with intravenous quinine and salines The stools were examined for organisms of dysenteric group and protozoa with a negative result The diarrhœa continued, the stools constantly containing blood and traces of mucus Ultimately he became incontinent and died eight days after admission Post mortem, spleen was enlarged to four times normal size Large intestine showed moderate congestion with small punctate submucous hæmorrhages, no ulceration, and whole mucous membrane smooth and glistening

Sergeant B, aged 24, sent into hospital on Sept 2nd, 1916, with history of having been unwell for nine days, at first with constipation, abdominal pain, and vomiting Three days before admission he began to suffer from severe diarrhœa On admission he was collapsed and bowels moving every half hour, stools liquid, fæculent, and heavily stained with blood and bile Marked icteric tinging of sclerotics The blood showed the presence of numerous subtertian rings The diarrhœa continued and ultimately the motions appeared to consist of almost pure blood Post mortem, the whole of large bowel showed a microscopically intact smooth glistening mucous membrane without any suggestion of ulceration Extensive submucous hæmorrhages were present throughout whole of large bowel

Choleraic pernicious fever —Fortunately only two cases of this type were met with Both cases died within 15 hours of admission in spite of intravenous quinine and salines

Private K, admitted on Sept 14th, 1916, from a camp alongside our lines On admission was in state of profound collapse, with subnormal temperature, sunken cheeks, blue nails, and cold, cyanotic extremities Mentally he was dull, and it was difficult to get a history, but it appeared he had not been well for two days, although he remained on duty till day of admission Parasites not found in blood film There was incontinence of fæces, and a watery brown fluid without visible blood or mucus continued to ooze from anus He died within 12 hours of admission Post mortem, spleen was slightly enlarged and almost diffluent Colon and sigmoid flexure presented moderate congestion but no trace of ulceration Smears from spleen, after prolonged search, showed rings and crescents of subtertian malaria

The other case was exactly similar except that it was a second attack and that the parasite was readily found in the blood

Appendicular type —Cases strongly suggesting appendicitis have not been infrequent In all we have seen some 12 cases of this type The chief complaint was vomiting and severe pain referred to the right iliac fossa associated with moderate pyrexia and marked tenderness and rigidity in the right iliac fossa In most of the cases it was possible to show that the rigidity was not constant. In some of the cases the tenderness was most marked somewhat above McBurney's point, in others it corresponded accurately with this point. In all of our cases we were able to demonstrate either the presence of the parasite in the blood or a definite enlargement of the spleen None of our cases showed a leucocytosis, and all had the typical relative lymphocytosis of malaria. All rapidly cleared up under quinine treatment. We have also seen a few cases in which the abdominal pain and rigidity were so marked and so diffuse as to suggest an acute abdomen but these also rapidly cleared up under the use of quinine with the exception of one case which was complicated with septicæmia This at the autopsy showed a purulent pleuritis and peritonitis, in the exudates of which streptococci were demonstrated

Bilious remittent fever —Thirteen of our fatal cases were of this type These cases had all been ill several days before admission to the base hospital. On admission they were collapsed, with marked yellowing of the conjunctivæ and a peculiar earthy facies They suffered much from almost constant vomiting, and the majority from billious diarrhœa and mental confusion After treatment by intravenous quinine and intravenous saline they improved from a condition of apparently extreme urgency to one of relative comfort, but, unfortunately, the improvement was not maintained, and after a period of from two to five days their condition again became critical The jaundice became deeper, the vomiting, often accompanied by uncontrollable hiccough, again became severe, the bowels incontinent, the temperature rose, and they died in coma or delirium The chief macroscopic features post mortem were enlargement of the spleen and submucous hæmorrhages in various organs and the presence of a gall bladder distended with thick dark bile

Pernicious fever with pulmonary symptoms —Both numerically and as a cause of death the next most important group was that in which the patients' dominant symptoms were referred to the respiratory tract Of the cases of malaria which terminated fatally, pulmonary complications of a pneumonic or broncho-pneumonic character were present in 7, and were the immediate cause of the fatal issue. Amongst the patients admitted to the hospital were a large number who complained of respiratory symptoms, and some who were admitted under the varying diagnoses of bronchitis, broncho pneumonia, and congestion of the lungs, were found subsequently to be suffering from subtertian malaria. In them the malarial parasite could be demonstrated in the blood Amongst these cases were a small proportion who, in addition to their malaria gave a history and presented the physical signs of a chronic bronchitis and emphysema, and in them the occurrence of a malarial attack caused a decided increase in their symptoms and physical signs In the majority of cases, however, there was no history of bronchitis nor any evidence of emphysema Amongst these the pulmonary complications could be divided into the bronchitic, the broncho-pneumonic, and pneumonic

The bronchitic type —The patients complained of pain and tightness in the chest with persistent cough, accompanied by expectoration They presented the ordinary signs of a diffuse bronchitis with numerous rhonchi and râles scattered all over both lungs Some showed the typical malarial pyrexia, others an irregular intermittent pyrexia, while others ran a normal or subnormal temperature throughout their stay in hospital They differed from an ordinary bronchitis only in the presence in the blood of the malarial parasite, and their rapid response to treatment by quinine It is not suggested that the bronchitis is caused by the malarial parasite and it may be that the bronchitis is nothing more than that which is usually associated with the onset of any acute febrile illness Nevertheless the respiratory symptoms are so well marked and the patient's complaint is so entirely referred to his chest that one is, we think, justified in separating out a definite clinical group—the bronchitic

The pneumonic and broncho-pneumonic type —The term pneumonic is not strictly accurate for the whole of this group of cases, and all that it is meant to convey is that we are dealing here with a group of cases in which the physical signs suggest that there are in the lungs areas of more or less extensive consolidation, some definitely lobar, others lobular or confluent lobular To this group belong the fatal cases already referred to. In all of these seven cases subtertian parasites were demonstrated in the blood and in all were definite physical signs, in some lobar, in others lobular consolidation. Of these seven cases at autopsy four showed definite lobar consolidation of one or more lobes, complicated in two cases by hæmorrhagic pleurisy. These showed the ordinary macroscopic appearance of lobar pneumonia in the grey hepatic stage. In the other three cases there was extensive lobular consolidation of both lungs. In one case there was present in addition to the broncho-pneumonia, 12 ounces of blood stained serous fluid in the pleural cavity. In both these groups we would appear to be dealing with a superadded infection in which the malarial parasite was at the most but a predisposing cause. It is worthy of note however, that during this period only one case of pneumonia unassociated with malaria was admitted.

A third group comprised a series of cases which from the onset of the illness presented definite pulmonary physical signs and symptoms which pointed to areas of definite consolidation in the lungs, though the course of the disease was not that of a true lobar or lobular pneumonia. Two cases are described in detail. In both subtertian parasites were demonstrated in the blood.

Private F, aged 20 reported sick on Oct. 22nd, 1916 complaining of shivering, malaise and diarrhœa. Admitted to hospital on the 29th. He was pale, with slight icteric tint of sclerotics. The spleen was three fingers breadth below costal margin. Over left lower lobe posteriorly there was evidence of consolidation with bronchial breathing and numerous medium sized moist râles. Anteriorly there was bronchial breathing in second, third, and fourth left intercostal spaces. No definite dullness on percussion either anteriorly or posteriorly and vocal resonance and fremitus not markedly increased. The lung condition remained practically unchanged until Nov 13th, when the breath sounds lost their bronchial quality, became a little weak, and a friction rub developed over the left lower lobe posteriorly. On day of admission temperature rose to 103° F, pulse to 112, and respirations to 32. Next day temperature did not rise above 99°, but on following day again rose to 103°. It fell again on the subsequent day and then remained normal. The pulse-respiration ratio was not at any time much disturbed. There was little cough and no expectoration. He was treated with 20 grains of quinine intramuscularly twice a day for the first six days and then by 20 grains intramuscularly and 40 grains by mouth for the next seven days.

Lance-Corporal L. aged 29, reported sick on Nov 1st, 1916 complaining of pain in chest, headache, and shortness of breath, no shivering. On the 4th he was admitted to hospital with diagnosis of congestion of lungs. He did not have the general appearance of pneumonia nor did he look very ill. Dyspnœa was evident only on exertion. Spleen just palpable. Whole of right lung was involved. Anteriorly breath sounds above and below clavicle were bronchial and all over anterior aspect of lung were numerous moist sticky râles. Movement was diminished but no appreciable percussion dullness. Posteriorly there was slight percussion dullness over right supraspinous fossa and over right base. Breath sounds over supraspinous fossa were bronchial and in a small area just below spine of scapula distinctly tubular. Numerous râles were present all over right lung and a few râles at left base. On admission temperature 99·8° F, pulse 96 respirations 36. On following day temperature was again 99·8°, falling on third day to normal. On the fourth day his general condition became worse. The temperature rose to 102·8° and for two days he lay in a curious state of wandering delirium. His temperature fell on the following day and did not rise above 99° at any other period of his illness. During the sudden rise in temperature the pulse was 84 and respirations 30 showing a distinct disturbance of pulse-respiration ratio. The signs over right side of chest gradually diminished but on the 12th without any rise of temperature or any increase in symptoms a large area of consolidation was found over the left lower lobe posteriorly accompanied by numerous moist râles. On the 27th the right lung was completely clear but the left lower lobe still showed bronchial breathing and râles. At no time was there any expectoration. Treatment was carried out with quinine by mouth.

These cases have been detailed because, although the chest signs and symptoms were perfectly well defined suggesting a lobular consolidation the course of the disease was certainly not that of lobular pneumonia. One of the cases showed a disturbance of the pulse respiration ratio, the other did not. Neither case had any expectoration. In neither case was the temperature chart that of a pneumonia, but was certainly characteristic of a malarial attack. In both cases subtertian parasites were found in the blood. The character of the pulse remained good throughout the course of the disease, and at no time were the patients seriously ill. It is difficult to suggest what the exact pathological condition in those cases is, but we consider there is no doubt that there is a clinical type of malaria associated with the physical signs of more or less extensive consolidation of the lungs in which there is no evidence whatever of a superadded infection. This type may be conveniently designated the pneumonic.

Cerebral cases.—An extremely interesting, but relatively small, group of cases presented cerebral symptoms of the well recognised cerebral types, but, as we intend to describe these later in detail from the point of view of treatment, we will only briefly mention them here. In all we have had nine cases in which the dominant symptoms have been due to local affections of the nervous system. Two of these were of the bulbar type and showed temporary paralysis of the muscles supplied by the bulbar nuclei, both recovered and were discharged from the hospital without any evidence of organic disease. One patient was admitted with a diagnosis of debility. Twenty-four hours after admission he suddenly became comatose and remained so for 15 hours. He also completely recovered. One patient 21 hours after admission while in the latrine developed an epileptiform fit. These fits, which were of a general epileptiform character, were repeated about 12 times in the following 24 hours. The left leg became somewhat weaker than the right and developed an extensor plantar reflex, which at the time of writing is still present. In addition the patient still presents definite nystagmus and a tendency to a reeling gait, but no evidence of active disease. In four cases the most marked symptom was violent delirium which persisted for several days uninfluenced by variations in the temperature. In three of the cases there was a high, intermittent pyrexia, in one the temperature was never above 99° F. In all the cases subtertian parasites were demonstrated in the blood and all the cases completely recovered. One patient presented meningitic symptoms associated with pneumonia at the right base. This patient died. The autopsy showed a considerable excess of cerebro-spinal fluid beneath the tentorium with œdema of the pia arachnoid over the base, and congestion of the vessels over the pons. Section of the brain after hardening in formalin showed no evidence of gross brain disease. The middle and lower lobes of the right lung presented the features of an ordinary croupous pneumonia.

Generalised œdema with ascites.—Two cases were admitted complaining of breathlessness and having generalised œdema.

Driver W, aged 35 reported sick on Oct 6th, 1916 complaining of breathlessness swelling of feet legs, and face, and headache. Admitted to hospital on the 9th. On admission there was considerable œdema of hands, feet, and legs, and eyelids were puffy. Visible mucous membrane almost colourless, some lemon-coloured tinting of sclerotics. Abdomen notably distended, subcutaneous tissues œdematous, and all the characteristic signs of a considerable accumulation of free fluid in peritoneal cavity. The spleen extended almost to umbilicus, liver not enlarged. Slight mitral systolic murmur, rate of pulse 78 and rhythm of heart normal. Apex beat in fourth space in nipple line. Nothing abnormal was made out in the lungs. The urine was of a specific gravity 1012, clear, straw-coloured, no albumin, bile, or sugar, deposit showed a few uric acid crystals, but no casts. Temperature normal on day of admission (Oct 9th) but rose to 103° F on evening of 10th, to fall on morning of 11th to 99·8°. From the 15th onwards temperature remained normal. Blood film showed presence of subtertian rings and crescents. Treatment by intravenous quinine was commenced on the 10th and later continued intramuscularly and by mouth. On the 12th condition was immensely improved. œdema of feet and hands had almost disappeared and it was no longer possible to demonstrate free fluid in abdominal cavity. On the 16th the blood was free from parasites and he was discharged to hospital ship on the 23rd.

Private B aged 25 reported sick on Oct 27th, 1916 complaining of swelling of legs and breathlessness. Previous to present illness had always been healthy. He was admitted to hospital on the 27th. On admission patient presented notable œdema of legs and of subcutaneous tissues of back and abdomen and eyes were puffy. Visible mucous membrane pale, slight lemon tint of sclerotics. Abdomen considerably distended and gave all the characteristic signs of free fluid in abdominal cavity Spleen extended almost to umbilicus, lower margin of liver half an inch below costal margin Apex beat of heart in fifth space almost in nipple line, pulse-rate 96, rhythm normal, second pulmonic sound not definitely accentuated Nothing abnormal made out in lungs The urine did not contain albumin or casts Blood film showed presence of subtertian crescents and rings and red blood cells marked anisocytosis and polychromatophilia Temperature normal and remained so Patient treated at first with intramuscular quinine and later with quinine by mouth By Nov 11th œdema of extremities and physical signs of ascites had completely disappeared He was discharged to a hospital ship on Nov 15th

In these two cases we have the presence of œdema of the face and extremities and notable ascites without any evidence of either primary heart or renal disease Both cases showed the presence of subtertian parasites, and both very rapidly cleared up under quinine treatment Apart from the absence of any evidence of heart disease the distribution of the œdema, affecting the face, and the presence of a notable amount of ascites without enlargement of the liver are sufficient to exclude a cardiac origin for the œdema Similarly the presence of a perfectly normal urine in both cases excludes a renal origin We would suggest that the œdema is of toxic vascular origin similar to the œdema and ascites seen in the late stages of multilobular cirrhosis of the liver

Gangrene of the feet —Another group, consisting of three cases, showed evidence of local vascular changes in the development of gangrene of the toes

Private B, A.S C, aged 26, admitted to hospital on Oct 4th Reported sick on Oct 1st, complaining of loss of use of legs and numbness of feet He stated that he had not been unduly exposed before reporting sick On admission to hospital temperature was 102° F, conjunctivæ slightly icteric, and spleen palpable Blood film showed presence of numerous subtertian parasites He complained of very severe pain in both feet, shooting up the legs, both feet were considerably œdematous, and over dorsum of each foot was a large purple ecchymosis The great toe and all smaller toes of right foot and the small toes of left foot were slightly swollen and almost black in colour On soles of both feet from bases of toes backwards for a distance of about one inch the skin was purple in colour Sensation to gross touch was still present, the dorsalis pedis and posterior tibial arteries of both feet could be felt pulsating quite strongly As it was considered possible that a vascular spasm aggravated by quinine might be a factor in the condition, the patient was not given quinine, but was treated with 0 4 gm galyl intravenously Next morning the temperature had fallen to normal, and remained so for the remainder of the patient's stay in hospital The general condition steadily improved, blood reported negative to malaria on the 10th The feet rapidly improved, and apart from slight superficial necrosis on dorsum of right foot completely recovered On Oct 14th he was put on 20 grains quin sulph daily by mouth and was discharged to hospital ship on the 28th

Private M, aged 24, admitted to hospital on Oct 11th Reported sick on Oct 5th, complaining of shivering, pains in head and back For three weeks before reporting sick his company had been resting behind the line On Oct 7th when taking off his boots he noticed that his feet were cold and that his toes were blue He found that he was unable to stand on his feet on account of pain and because "he could not feel his feet" On admission to hospital his only complaint was pain in his feet Presented distinct icteric tinging of sclerotics, spleen palpable Both feet showed discolouration of the toes the left foot being more affected than the right All the toes of both feet were affected, the colour varying from brownish purple to purple On the left foot the plantar surface of all the toes showed small bullæ, on the right foot only the large and third toes presented bullæ The dorsalis pedis and the posterior tibial arteries of both feet could be readily felt pulsating Patient was put on 1 drachm quin sulph daily and steadily improved Both feet recovered without any loss of tissue

Driver W, aged 21, admitted to hospital on Oct 9th with diagnosis of malaria Reported sick about ten days before admission to base hospital on account of shivering and pain in head and back On second day of admission to a field ambulance the feet became very cold and continued so in spite of hot bottles Next day the feet were seen to be blue On admission to base hospital there was considerable œdema of both feet, all the toes of both feet were blue with large bullæ, especially on right big and second toes, extending for some distance over dorsum of feet Several bullæ were burst and were discharging sero purulent fluid The dorsalis pedis and posterior tibial arteries could be felt beating quite strongly in both feet Marked icteric tinging of sclerotics, spleen palpable one inch below left costal margin Blood film showed no malarial parasites Patient on admission was given an intravenous injection of 0 4 gm galyl, and ten days later was put upon quinine General condition rapidly improved, but considerable sloughing occurred over dorsum of large and second toes of right foot, involving loss of nail of great toe, and opening into first interphalangeal joint of second toe Also slight superficial sloughing over dorsum of left large toe

Mortality and Post mortem Findings

Thirty cases infected with malaria have died Of these one was a case of subtertian malaria who was quite convalescent from malaria when he developed an extremely septic throat followed by pneumonia Post mortem there was ulceration of the pharynx and epiglottis with septic consolidation of both lower lobes of the lungs In two cases there was in addition to malaria a Shiga dysentery and the patients died of running dysentery Post mortem, in both cases almost the entire mucous membrane of the whole of the lower bowel and the lowest two feet of the ileum was destroyed One case died of amœbic dysentery and septicæmia The mucous membrane of the lower bowel was much destroyed and there were abscesses in both kidneys Four cases died of lobar pneumonia affecting one or more lobes In one of those there was, in addition, an extensive hæmorrhagic pleural exudate In those cases malaria was not the cause of death

This leaves 22 cases with a total case mortality of 0 61 per cent Three cases presented at the autopsy extensive lobular consolidation of the lungs, complicated in one by hæmorrhagic pleurisy The immediate cause of death in those cases was also probably the lung condition, and it is a debatable question whether they respresent a double infection or a true complication of malaria Two cases died of septicæmia One was admitted to hospital with a septic arm following an intramuscular injection of quinine At the autopsy pyæmic abscesses were found in the lungs and kidney and recent vegetation on the mitral valve One was admitted in an extremely collapsed condition with numerous septic sores on both arms and developed signs of pleural and peritoneal effusion At the autopsy there was found a right-sided septic pleural effusion and septic peritonitis *Streptococci* were recovered from the pleural and peritoneal fluids

Excluding those 5 cases, we have 17 cases of uncomplicated malaria with a mortality of 0 47 per cent In one case the autopsy disclosed moderately advanced granular kidneys and in one case a right-sided hydronephrosis which had largely destroyed the right kidney

We take this opportunity of thanking Colonel Purves Stewart, C B, A M S, consulting physician to the Salonika Force, for his valuable assistance and advice, which was always at our disposal during this period To Lieutenant-Colonel P Mitchell we are also indebted for permission to use the hospital records, and to Captain R Richards, R A M C T F for the hæmatological and bacteriological and post-mortem reports

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SHORTAGE OF MIDWIVES IN CORNWALL —At the last meeting of the Cornwall Sanitary Committee the county medical officer of health (Dr E M Clarke) reported that 20 additional midwives were required for the parishes of Cornwall He stated that at present there was an excessive birth mortality in the county, 4 5 per 1000 births, compared with 4 0 per 1000 in England and Wales, and 2 0 per 1000 in some London districts, adding that the mortality rate depended upon the quality and amount of attendance available at birth The committee decided to recommend the Cornwall County Council to make an additional grant of £275 for the training of nurse midwives

THE LATE MR ALFRED UPTON —The death occurred at his residence at Hove, on April 10th, of Mr Alfred Upton, L R C P Lond, M R C S, who had practised in Brighton and district since the year 1877 He came of an old North Sussex family, being a son of the late Mr Henry Upton, of Petworth Educated privately, he studied at St Bartholomew's Hospital, London, where he was Foster prizeman and obtained distinction in surgery and forensic medicine In 1875 he took the L S A diploma and became M R C S in the following year At Hove he had an extensive practice, and he will be greatly missed among the poorer classes, by whom he was regarded as a friend Mr Upton was a prominent Freemason, and was interested in sailing, cycling, and gardening He leaves a widow and daughter

NOTES ON THE SYMPTOMATOLOGY OF PARATYPHOID FEVER

BY J M FORTESCUE-BRICKDALE, M A , D M OXON , M R C P LOND ,
CAPTAIN R.A.M C (T F)

THE following notes on the symptomatology of paratyphoid fever are based on the study of the case sheets of patients admitted to an isolation hospital in France during the last five months of 1915 and observed by the writer and his colleagues The diagnosis was confirmed, or rather established, by laboratory tests in all cases, the routine examination including one or more cultivations from the blood, three or more cultivations from the urine and fæces, and three agglutination tests The large majority of the cases were infected by the *Bacillus paratyphosus B*, the incidence of typhoid and paratyphoid A being so small that these infections have not been included in the tables given below, which refer solely to 237 available records of paratyphoid B

The main features to which attention will be directed are (1) The type and symptoms of onset, (2) the type of pyrexia, (3) the condition of the spleen, (4) the eruption, (5) the appearance of the patient and the general course of the disease These points do not, of course, by any means cover the whole ground, but may be found of some interest to those who desire to study the clinical details of the enteric group of infectious fevers

1. *Type of onset* —Three types have been noted —

(*a*) The abrupt onset, which is by far the most frequent in this series, and includes two thirds of the cases The history of this type of case begins with an abrupt rise of temperature, accompanied by headache, shivering, and general malaise Diarrhœa, usually lasting a few days, is common, and less so abdominal pain and vomiting The initial diarrhœa occurs more frequently in cases in which the febrile attack is prolonged, and the same is true of vomiting Thus in 56 cases in which the fever lasted for more than 14 days, initial diarrhœa occurred in 52 per cent In 34 cases in which the fever lasted for 7 to 14 days it occurred in 30 per cent, while in 18 cases of under one week's fever the percentage was only 22

(*b*) The second type of onset is still sudden, but is preceded by a variable prodromal period in which the patient is not well, but is generally able to perform his usual duties This type was noted in 16 per cent of the cases The prodromal period varied in length, in one case it was given as 12 hours, and in others as two or three weeks, but usually it lasted for two or three days The most usual symptom during this time was diarrhœa, which was noted in 36 per cent of the cases, headache occurred in 20 per cent, anorexia in 12 per cent, backache and abdominal pain in 8 per cent The abrupt exacerbation or true onset did not differ from that described above

(*c*) The third type only occurred in 16 per cent and was gradual and prolonged It differed from the other two groups, as will be seen from the following figures —

	Per cent		Per cent
Gradually increasing headache	83	Mild diarrhœa	42
Abdominal pain	50	General aching	33
		Vomiting	21

The point at which the patient gave up work was variable, and did not depend entirely on the severity of the symptoms, so that an actual day of onset was difficult to fix

Some relationship appears to exist between these three types of onset and the duration of the fever, or, in other words the severity of the intoxication In the following table it will be seen that the abrupt onset though most frequent in all cases occurs in a higher proportion among the shorter attacks while the highest percentage of insidious onsets is found among cases of a more prolonged and severe character

Duration of fever	No of cases	Percentage with—		
		Sudden onset	Prodromal symptoms	Gradual onset.
Over 14 days	90	62·2	20·0	17·8
7 to 14 days...	45	75·5	11·1	13·3
Under 7 days	22	81·7	9·1	9·1

Symptoms of onset —The following table shows the frequency of the various *initial* symptoms and is based on the records of 157 cases It is interesting to note that this table corresponds very closely with the figures published by Torrens and Whittington,[1] and Wiltshire [2]

	Per cent.		Per cent
Headache	84	Cough	13
Shivering	49	Vertigo	11
Diarrhœa	41	Constipation	7
Abdominal pain	32	Sore-throat	3
Backache	28	Epistaxis	2
Vomiting	25	Herpes labialis	1
General aching	24	Fainting	1

If the three tables are combined the following results are obtained —

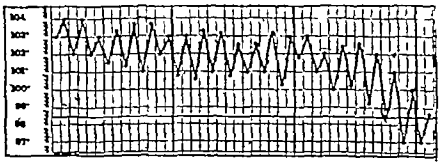
Headache	90%	out of 385 cases	General aching ..	25%	out of 385 cases
Diarrhœa	45%	385	Vomiting ..	17%	335
Shivering	37%	307	Cough	13%	307
Abdominal pain	32%	385	Epistaxis	10%	307
Backache	26%	307	Vertigo	9%	307
			Sore-throat	4%	385

2 *Type of pyrexia* —The longer fevers naturally show a more characteristic type, thus in 97 cases in which the pyrexia was maintained for 10 days or more the following five types were distinguishable —

(1) *Simple continued type* —These constitute about 29 per cent of the total and show no distinctive features except the common tendency to remission towards the end of the attack (Chart A) In the chart shown the course of the fever is remarkably regular, and shows the abrupt initial rise In other cases in this group the temperature was more fluctuating and irregular

CHART A (Type 1)

The chart gives in each case the morning and evening temperature, and the thicker lines indicate intervals of a week



(2) *Intermittent type* —This group includes 43 per cent of the series, and is to a certain extent characteristic of paratyphoid infections The temperature in these cases, while remaining high in the evening, drops towards or below normal in the morning ("spiky chart") The intermissions may be observed either at the beginning or end of the attack (Chart B), but are probably most frequent when the temperature is beginning to fall (Charts C and D)

CHART B (Type 2)

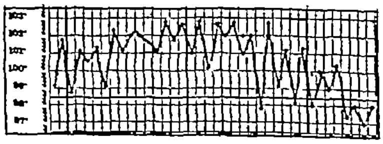


CHART C (Type 2)

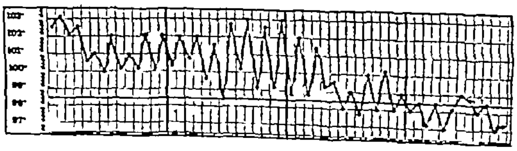
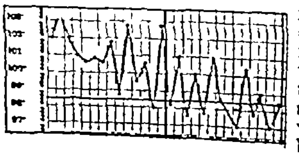


CHART D (Type 2)



(3) *Undulant type* — This small group constitutes 12 per cent of the cases No correlation was traced between this type of temperature and other features in the attack either as regards severity, the appearance of the rose spots, or the agglutination reaction of the serum The mean duration of the fever was

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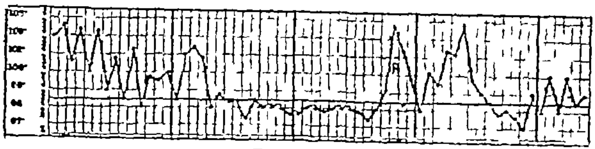
[1] Brit. Med Jour Nov 13th 1915
[2] Practitioner, 1915

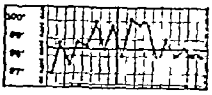
22 days, the longest period being 34 days and the shortest 14 In one case (Chart H) a relapse occurred showing the same type of temperature as did the original attack

CHART H (Type 3)



R relapse

CHART H (continuation)



In two cases the rise of temperature constituting the ascending wave was definitely due to pleurisy and bronchitis and in five others there were physical signs of bronchitis in the lungs, but no correspondence could be traced between the undulations in the temperature and the extent of the bronchial affection In two cases not included in this group the temperature rose again after an apyrexial period of one or two days, which seems to connect the undulant type with attacks, followed by a definite relapse

(4) *Low irregular fever* —In 5 per cent of the series the fever was a low, irregular type, the morning temperature being normal or subnormal and the evening temperature usually 99° or 100° F This type may begin with a few days' high fever The mean duration of the pyrexia in this group was 33 days, the longest period being 63 days and the shortest 15 days The illness, though somewhat prolonged, is, as might be expected, of a mild nature It is not associated with any special clinical or bacteriological characteristics (Chart L)

CHART L (Type 4)

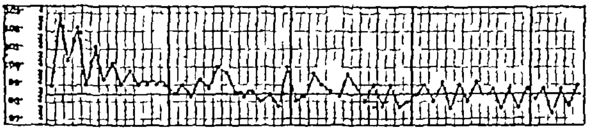
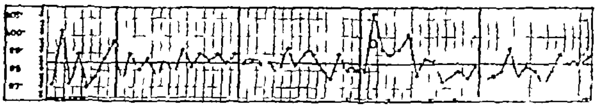


CHART L (continuation)



O otitis media

(5) *Type with subsequent rises of temperature* —In this group, about 11 per cent of the total cases, the initial fever may present the characteristics of any of the preceding types, the outstanding feature of the group being a sudden rise of temperature lasting from 24 to 48 hours, which occurs some days after the primary pyrexia is over and the general symptoms have subsided These sudden rises may be repeated at intervals, they are usually accompanied by some headache and the general aching pains common in febrile states, but all the symptoms clear up as soon as the temperature becomes normal In one case severe sweating and shivering were noted, in one case the spleen was enlarged, and in two there was tenderness over the left hypochondrium In none of these cases was tenderness over the gall bladder noted, though this occurs and has been held to point to a cholecystitis In one case a blood culture made when the temperature was rising showed a negative result In true relapse a positive culture can often be obtained from the blood when the temperature rises abruptly on the first or second day (Charts M and N)

CHART M (Type 5)

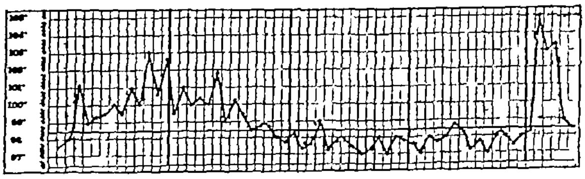


CHART N (Type 5)

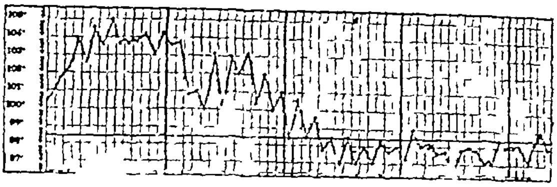
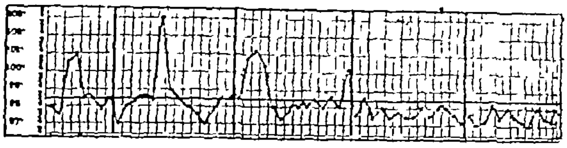


CHART N (continuation)

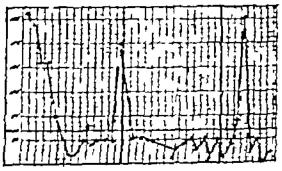


The following table shows the days on which the temperature rose in 11 *cases, reckoned from the first day of normal* temperature

7th day	1 case	5th and 12th day	1 case
8th	3 cases	9th and 15th day	1 case.
16th	1 case	15th and 20th day	1 case.
17th	1 case	25th and 31st day ..	1 case.
4th and 9th day	1 case.		

In another series of 31 cases in which the fever lasted for 10 days or less the same phenomenon was observed in 4 cases Two of subsequent rises of temperature occurred on the sixth day after the subsidence of the initial fever, one on the thirteenth day and one on the twenty first day In a fifth case, in which the initial fever was very short, the subsequent rises occurred on the fifth and fourteenth days In this case the agglutinations were positive to paratyphoid B on two occasions in dilutions of 1 750 and 1 500 respectively, but no cultures were obtained (Chart O)

CHART O



3 *Condition of the spleen* —In the total series of cases the spleen could be palpated in 43 per cent, increase of splenic dullness and tenderness in the splenic region were observed in others in which the organ itself was not felt

In a few cases the spleen was palpable as early as the fourth day of disease, and in most it remained so till the end of the febrile period Occasionally it did not return to its normal size for two or three days after the temperature had fallen *In these cases no relapse occurred* The organ is firm to the touch and the edge is usually easy to delimit, in six necropsies the actual weight varied from 3½ to 9 ounces, the average being 6½ ounces

4 *The eruption* —The characteristic eruption was observed in 63 per cent of the total series

The earliest appearance of the rash (one case) was on the third day and in some others it appeared for the first time on the fourth In some cases crops of spots continued to come out till the beginning of the fifth week, and the last appearance of spots was in not a few cases subsequent to the final fall of temperature The most marked feature of the rash was its pleomorphism, the following types occurring either singly or in association on the same patient —

(i) Small, well-defined spots, not much raised and of a darkish pink colour

(ii) Large, well raised, light pink spots, with ill defined, irregular margins

(iii) Fairly well defined spots surrounded by a faint pink or purplish areola

(iv) Moderately sized, well-defined spots, conical in shape, with a tendency to become vesicular

5 In the milder cases the appearance of the patient is *not distinctive but in cases of more* severe type there is a peculiar bloated, flushed appearance which is to some extent characteristic The patient is also somnolent or drowsy, but as a rule can answer questions accurately when roused. Although intensely toxic cases occur, in the great majority the patient does not appear so poisoned as the height and duration of the fever would lead one to expect Convalescence *is soon* established, and if no sequelæ occur complete re-establishment of health is rapidly attained A brief period of tachycardia *is not, however,* uncommon during convalescence In three fifths of the cases summarised the fever lasted for more than 14 days

AN IMPROVED METHOD FOR THE ESTIMATION OF SUGAR IN THE URINE AND BLOOD

BY P J CAMMIDGE, M D LOND

IN the *Journal of Biological Chemistry* for November, 1915[1] F M Scales described a new volumetric method for estimating reducing sugars, which he states gives as accurate results as those obtained by weighing, but with an expenditure of less than a quarter of the time

A known volume of the saccharine solution is added to an excess of Fehling's solution and the mixture boiled for two minutes. It is then agitated to bring the precipitated cuprous oxide into suspension immediately poured through a special funnel into dilute hydrochloric acid contained in a specially prepared volumetric flask, and made up to the mark with boiling water After thorough mixing an aliquot part of the resulting cuprous chloride solution is pipetted into a known volume of dilute standard iodine solution and the iodine not reduced by the cuprous chloride titrated with a standard solution of thiosulphate, using dilute starch as the indicator The difference between the number of cubic centimetres of thiosulphate solution oxidised by a blank control containing the same volume of iodine solution and the number of cubic centimetres of thiosulphate acted on by the iodine remaining after the addition of the cuprous chloride being proportional to the amount of cuprous oxide in the original solution, and this in its turn depending upon the strength of the saccharine solution, the percentage of sugar in the latter can be calculated by the use of appropriate tables and factors

Shortly after the appearance of Scales's paper I carried out a number of experiments with solutions of various reducing sugars of different strengths, and was able to confirm his claims as to the accuracy and speed of the process I therefore decided to adapt it to the estimation of sugar in the urine, as it did not involve the use of chemicals that are now difficult to obtain or are prohibitive in price, beside being simple and comparatively rapid. Experience suggested modifications in the technique to overcome minor difficulties which were encountered and resulted in the evolution of a process that is, I think, an improvement on Scales's method An account of the procedure I now employ may be useful to others, especially as, with slight modifications, it can be used for the estimation of sugar in the blood, cerebro spinal fluid, &c , thus avoiding a multiplicity of apparatus and reagents, and giving results that are more strictly comparable

In place of the Fehling solution employed by Scales I use a modified Benedict solution, made by dissolving 200 gm of sodium citrate 100 gm of anhydrous (or 200 gm of crystallised) sodium carbonate and 10 gm of sodium bicarbonate in about 600 c c of distilled water by the aid of heat, and adding to it with constant stirring a solution consisting of 21 gm of crystallised copper sulphate dissolved in about 150 c c of distilled water When the mixture has cooled to the room temperature it is made up to 1000 c c with distilled water and filtered Preserved in a tightly stoppered bottle, this solution keeps indefinitely and may be used for qualitative as well as for quantitative work It is about ten times as sensitive to the reducing action of sugar as Fehling's solution so that a very small proportion of urine gives an unmistakable reaction even when it contains a very low percentage of sugar, and as it is not appreciably reduced by uric acid, creatinine, &c , the main difficulties encountered in using Fehling's solution are obviated

Owing to the presence of sodium carbonate the addition of hydrochloric acid in the quantitative method causes an evolution of carbon dioxide, so that the subsequent operations are carried out in an atmosphere of that gas, thus preventing oxidation of the cuprous salts by the air—an improvement on Scales's process where reliance is placed on the high temperature, speed of manipulation, &c I find that the best results are obtained if 25 per cent of a saturated solution of sodium carbonate (20 per cent) is added to the copper reagent immediately before use One of the drawbacks to Scales's original method is the way the reduced cuprous oxide tends to adhere to the walls of the beaker, especially after it has been used for several estimations and if it is not of Jena glass By adding the hydrochloric acid to the boiling copper solution this difficulty is overcome and, as the atmosphere of steam in the beaker is replaced by inert carbon dioxide, the risk of oxidation is diminished The cuprous chloride solution that results still in its atmosphere of carbon dioxide, may be poured directly into the iodine solution through a suitable funnel without coming in contact with the air, at the same time avoiding the discomfort of measuring and pipetting the boiling hot liquid The omission of the latter processes is also an economy of time

Twentieth normal iodine solution is the most convenient to use As the accuracy of the results depends largely on this solution, it must be very carefully prepared by dissolving 9 gm of potassium iodide in about 200 c c of distilled water then adding exactly 6 35 gm of pure re-sublimed iodine and shaking occasionally until it is dissolved, finally, the solution is made up to 1000 c c with distilled water A corresponding twentieth normal solution of sodium thiosulphate is made by dissolving about 13 gm. of the crystallised salt in about 500 c c of distilled water and making up to 1000 c c This solution is standardised against the iodine solution, preferably after standing over night, using a 1 per cent starch solution as the indicator and diluting as necessary according to the formula, $\frac{N \times d}{n} = C$, where N = the quantity of thiosulphate solution left to be diluted (in cubic centimetres), d = the difference between the actual and theoretical number of cubic centimetres of thiosulphate required in the trial, n = the number of cubic centimetres actually used, and C = the amount of distilled water (in centimetres) to be added to bring the solution to the standard strength

The only special apparatus required in carrying out an estimation is a 200 c c conical flask fitted with a rubber stopper perforated with two holes, through one of which is passed the stem of a large headed thistle-funnel, while the other is left open to act as a vent The stem of the funnel is drawn out to a jet and is so arranged that the tip of the jet is just covered when the flask contains 100 c c of water

Detection of Sugar in the Urine

The modified Benedict solution is first used to determine the presence of a pathological excess of sugar in the urine and also to gain an approximate idea of the amount

For this purpose about 5 c c of the solution are placed in a clean test-tube and eight drops, not more, of the urine added The contents of the tube are then boiled, either in a free flame for one to two minutes, or, what I find much better, in a boiling water bath for five minutes In the latter case the water must be actively boiling when the test-tube is placed in the bath and it must be kept in a state of active ebullition for the whole of the five minutes The advantages of this method are, first, the tendency of the boiling fluid to bump and spurt is avoided, second, there is no appreciable loss by evaporation, which may cause a misleading turbidity, third, a number of tests may be carried out simultaneously in a numbered rack, thus saving time

When the heating is completed the test tube is allowed to cool undisturbed at the room temperature for two minutes, if the urine is "sugar free" the copper solution is clear, or only shows a faint blue turbidity due to precipitated urates, at the end of that time, should sugar be present, it becomes more or less opaque and changes colour either before or after cooling the bulk, colour, and rapidity of formation of the precipitate varying with the percentage of sugar If there is only a small amount, under 0 1 per cent , or the reducing substance is chiefly pseudo lævulose,[2] a light green opacity forms after the test tube has been removed from the water bath , a more bulky green precipitate, present when the tube is taken out of the boiling water, indicates about 0 1 to 0 5 per cent , a dense yellow precipitate suggests about 0 5 to 2·0 per cent , and a thick red precipitate points to there being over 2·0 per cent of sugar

Estimation of Sugar in the Urine

When a rough idea of the probable percentage of sugar has been gained a specimen of the urine is diluted with water according to the following scheme —

A, light green precipitate	dilute 40 c.c	to 100 c.c
B a dense yellow	” 20	”
C a thick red	” 10	”
D occasionally*	” 5	”

(* This dilution is only required if the urine contains over 6 per cent of sugar which is shown by a trial estimation with the previous dilution failing to give a satisfactory result.)

Exactly 5 c.c of the diluted urine are now added to 15 c c of modified Benedict solution and 5 c.c. of a saturated solution of sodium carbonate, contained in a 200 c c beaker The beaker is covered with a watch glass, placed on a wire gauze over the flame of a Bunsen burner, and its contents heated to boiling After exactly three minutes' boiling the watch glass is removed and 10 c.c of hydrochloric acid (sp gr 1 16) are cautiously run in, taking care to avoid excessive frothing The contents of the beaker are now poured as rapidly as possible into the thistle funnel of the flask *described above*, which has been previously prepared by placing in it about 100 c c of water and exactly 20 c c of *twentieth normal iodine solution*, measured with a pipette kept for the purpose Care must be taken that the copper solution does not run into the flask too quickly and that it is thoroughly mixed with the iodine solution, as it does so by gently rotating the flask The beaker is washed out with a few cubic centimetres of hot water and the washings poured into the funnel

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[1] Jour of Biol Chem. 1915 xxiii., 81

[2] Cammidge: THE LANCET, 1915, i. 320 1916, i , 1216

The flask is now unstoppered, the stem of the funnel washed into the iodine with a little water, and the standardised *twentieth normal thiosulphate* solution run into the latter from a burette until the brown colour of the iodine is almost discharged At this point five or six drops of fresh cold starch solution (about 1 per cent) are introduced and the addition of the thiosulphate continued until the blue colour of the resulting iodo starch is completely discharged When the end point is reached the solution has a faint light green colour which it is quite easy to distinguish from the blue of the iodo starch, even by artificial light A control consisting of 100 c c of water and 20 c c of twentieth normal iodine, measured with the same pipette is titrated with the *sodium thiosulphate* solution in a similar way The difference between the number of cubic centimetres of thiosulphate used in the test and consumed by the control, multiplied by a factor varying with the dilution of the urine employed according to the following table, gives the percentage of sugar in the original urine —

If a 40/ dilution	(A)	*was used, multiply by*	0·0845
20/	(B)	,	(2 × 0 0845) = 0 169
, 10/	(C)		(4 × 0·0845) = 0 338
5/	(D)		(8 × 0 0845) = 0 676

The total excretion for the day can then be worked out if *the amount of urine passed is known This is essential* if reliable inferences are to be drawn, for although it seems obvious that a consideration of the percentage of sugar or any other substance alone is likely to be misleading, especially in a condition where the daily output of urine may vary considerably from the normal *average, it is a fact that* is frequently overlooked, as patients are often sent to me for consultation bringing an odd sample of urine, either *not* taken from a 24 hour collection, or, *if it is*, without any attempt having been made to estimate the quantity passed

With the apparatus and solutions at hand an accurate determination of the percentage of sugar in a urine may be made by this method in ten minutes or less, and when a *series of estimations is being carried out* the time for each can be still further reduced A control for every specimen is not necessary, but as the sodium thiosulphate solution gradually deteriorates on keeping, especially if it is not prepared with fresh distilled water and is not kept from contact with the air, *it should be titrated against* the standard iodine at frequent intervals When it is used only occasionally it would probably be best to keep a stock solution of approximately double strength and dilute down as required, according to the results obtained with a trial titration against the standard iodine solution

Estimation of Sugar in the Blood

The same reagents and apparatus are employed as for the determination of sugar in the urine, but the iodine and thiosulphate *solutions are diluted* with distilled water, in a measuring flask, 1 in 50 (i e , to thousandth normal), and it is an advantage to use a smaller beaker (50 c c) and a smaller flask (100 c c) and funnel for the iodine As the dilute solutions do not keep well they should be prepared *fresh as required*

For most cases of glycosuria and for normal persons 0 2 c c of blood is used but *when a very high blood sugar is* expected (over 0 35 per cent) only 0 1 c c should be taken *These quantities may be readily obtained* from a prick with a needle, especially if the thin and comparatively insensitive skin at the root of the finger nail is selected and the finger is congested by swinging the warm hand in a dependent position for a few moments and then constricting the finger with a narrow bandage or rubber tube It is hardly necessary to point out that an accurately graduated pipette of *narrow* bore should be used for measuring the blood, and that any excess adhering to the outside must be carefully wiped *off* when the required quantity has been drawn up into the pipette In order to remove the albumin from the blood and secure a *solution* suitable for sugar estimation, it is laked by mixing it with a known volume of deci normal acetic acid *(1 c c of glacial* acetic acid to 125 c c of distilled water) made up to a definite volume with a saturated solution of sodium chloride, boiled, cooled and filtered An aliquot part of the clear filtrate is employed *for the sugar* estimation

The details of the method are as follows —

Exactly 3 c c of deci normal acetic acid are placed in a clean test tube and 0 2 (or 0 1) c c of blood is added, the pipette being washed out with the acetic acid two or three times by suction The mixture is allowed to stand for at least five minutes and subsequently made up to 10 c c by adding exactly 6 8 c c (or 6 9 c c if 0 1 c c of blood was used) of clear saturated sodium chloride solution The test-tube is now placed in a bath of boiling water *for a minute or two*, then cooled in running water, and its contents poured on to a small dry filter paper (5 5 *cm diameter*) As the clot is apt to slide out of the tube suddenly and cause the solution to overflow the filter it should be broken up previously by tapping the tube against the finger The first few drops of the filtrate are generally turbid and should be returned, as an absolutely clear filtrate is required

When a sufficient amount has come through exactly 7 5 c c are measured with a pipette into a small beaker containing 1 c c of modified Benedict solution and 1 c c of saturated sodium carbonate solution The beaker is covered with a watch glass, placed on a wire gauze over a Bunsen flame, and its contents gently boiled for exactly three minutes The flame is then removed and 2 c c of pure hydrochloric acid (sp gr 1 16) *are cautiously added* The solution is at once poured into a thistle funnel flask con*taining 25 c c of distilled water and 20 c c of thousandth* normal iodine solution, the same precautions as to mixing *&c , being taken as in the urinary sugar determination* The beaker is washed out with 2 or 3 c c of hot distilled water and the washings poured into the funnel The liquid adhering to the stem of the funnel having been washed into the flask with distilled water, the iodine is titrated with standardised thousandth normal sodium thiosulphate solution, using 3 drops of freshly prepared cold starch solution (about 1 per cent) as the indicator when the brown colour of the iodine has been almost discharged The end point is shown by the disappearance of the last faint trace of blue, or purple with a resulting colourless solution when the flask is examined against a dead white background by diffused daylight , artificial light does not give satisfactory results In warm weather *it is advisable to cool* the flask in running water before titration, as the last trace of blue is then more *readily seen*

A control titration with 25 c c of distilled water and 20 c c of thousandth *normal iodine is carried out for* each blood or consecutive series of bloods, and the end point carefully matched *The difference between the number of cubic* centimetres of thousandth normal thiosulphate used for the test and for the control multiplied by 0·0203 (or 0·0406 if only 0 1 c c of blood was used) gives the percentage of sugar in the blood The same method may be employed for determining the sugar content of cerebro spinal fluid, &c

These methods have been in daily use in my laboratory for over a year I find that they are *reliable* and are economical of time and material as compared with *others previously* employed The modified Benedict solution, which keeps *indefinitely unchanged, avoids most of* the fallacies of Fehling s solution and may be employed for both qualitative and quantitative work The end point of the urinary sugar determination is definite and easily recognised, even by artificial light, so that satisfactory results can be obtained *with very little practice and the whole process* is so simple that it can be readily learned The use of the same reagents and apparatus for the urine and *blood is a considerable* advantage from several points of view and not least that comparable data are secured As only a small amount of *blood is required for each* estimation several examinations of the same patient may be made on one day, if necessary, without discomfort *This is a matter of no* small importance since the sugar content of the blood is now recognised to be of greater value in the diagnosis and treatment of diabetes *than a determination* of the output of sugar in the urine

Nottingham place, W

DEATH OF MR JOHN KING —The death occurred *at his residence at Stratton, Cornwall*, on April 11th, of Mr John King, L R C P Edin , M R C S , L S A , J.P , in his 72nd year He belonged to an old Cornish family who have practised in Stratton for many generations He succeeded to his late father's practice nearly 50 years ago, and was for a long time medical officer of health for Stratton and Bude It is mainly to his efforts that those towns have an efficient sewerage scheme, and he worked hard to secure the excellent water supply which Bude now possesses He was a justice of the peace for Cornwall

Medical Societies.

ROYAL SOCIETY OF MEDICINE

SECTION OF ANÆSTHETICS

Anæsthetics at a Casualty Clearing Station

A MEETING of this section was held on Feb 2nd Mr **GEORGE ROWELL** the President, being in the chair

Captain **GEOFFREY MARSHALL**, R A.M.C, read a paper on Anæsthetics at a Casualty Clearing Station He showed that owing to the circumstances under which operations are performed at clearing stations the correct choice of anæsthetic often determines the patient's chance of recovery or the opposite He discussed the choice as it affects the lightly wounded, those seriously wounded, and those suffering from serious sepsis For the first class either gas and oxygen or an induction by warm ether and chloroform vapours was employed, warm ether being continued with He showed that an investigation of the blood was an all-important step towards securing the right anæsthetic for those suffering severely from recent wounds If there was a hæmoglobin percentage of less than 100, showing that the blood was dilute and that blood had been lost, then the use of stovaine by spinal injection was almost certain to be associated with serious fall of blood pressure and symptoms of collapse, and might lead to fatal results The blood *diminution* did not produce the same effect if 40 hours or more had passed since the infliction of the injury The conclusions as regards spinal analgesia were gathered mainly from consideration of 50 cases in which the hæmoglobin percentage blood pressure, and pulse rate were recorded before the injection of stovaine. Keeping the head low was found to be the most important step in preventing or combating collapse, and this position should be maintained *for an hour* after the return to bed Intramuscular pituitrin was found of little use and intravenous saline gave only *temporary help* Intravenous ether also did not give good results in the case of the shocked and recently wounded Captain Marshall found gas and oxygen the most satisfactory anæsthetic for wounds of the limbs of extreme severity and warm ether vapour for abdominal cases and for head cases For chest cases and mixed chest and abdominal cases warm chloroform vapour with oxygen proved the most satisfactory agent, in the latter instances it was best preceded by injections of morphia scopolamine and atropine Collapsed patients received intravenous saline towards the close of the operation

The paper was discussed by Colonel **HUGH RIGBY** who had seen much of the work on which Captain Marshall's paper was founded, by Mr **TYRRELL GRAY**, who disputed some of Captain Marshall's conclusions upon spinal analgesia and blood pressure, and by Mr **Z MENNELL**, Mr **H E G BOYLE**, and Mr **H BELLAMY GARDNER**

ROYAL ACADEMY OF MEDICINE IN IRELAND

SECTION OF MEDICINE

Sudden Death in Tabes Dorsalis —Limitations of Vaccine Treatment

A MEETING of this section was held on March 30th, Dr **H C DRURY** the President being in the chair

Dr **A R PARSONS** read a paper on two cases of Sudden Death in Tabes Dorsalis The first a man aged 41 had consulted him two years before complaining of some difficulty in walking and unsteadiness noticed chiefly while washing his face There was also slight trouble in micturition—at first difficulty in passing, later some loss of control Seventeen years previously he had a sore on the glans penis but no other symptoms His wife had had one miscarriage He was a healthy man with the exception of his nervous system which showed typical if rather slight signs of locomotor ataxia. Wassermann reaction was faintly positive The case ran the usual course for two years when one day at dinner the patient who during the day had been in his usual good general health, suddenly changed colour, and when examined was found to be dead The second case was similar, death occurring suddenly during a game of bridge In neither case could an autopsy be obtained, but frequent careful physical examination during life showed no evidence of arterial disease, and this could almost certainly be excluded He considered the most probable explanation of death to be "cardiac crisis," a condition almost entirely overlooked in text-books, but mentioned by a few authors, notably Gowers and Osler —In the discussion which followed the **PRESIDENT** thought that, in the absence of previous anginal symptoms, it was questionable whether death could fairly be ascribed to cardiac crisis In several cases of sudden death Professor P T O Sullivan had, he said, found as the only recognisable lesion a sclerotic or atheromatous condition of the aorta about the openings of the coronary arteries —Sir **J W MOORE** suggested that death was more probably due to brain mischief, e g, cerebral hæmorrhage —Dr **PARSONS**, in reply said that as far as was possible by clinical examination arterial disease had been excluded Death was, he thought, too sudden in both cases to be explained by cerebral hæmorrhage

Dr **R J ROWLETTE** read a note on the Limitations of Vaccine Treatment He spoke of the difficulty in general of judging of the value of a particular method of treatment, increased in the case of vaccines by the fact that treatment had been allowed to remain largely in the hands of men without clinical experience In preventive treatment, the case for vaccines was now admitted, particularly in view of the experience of the present war In curative treatment the efficiency of vaccines was limited by the power of reaction of the tissues Moreover, while vaccines could stimulate the tissues to resist an active infective process, they had no power to restore integrity of the tissues after infection had ceased Again, for vaccine treatment to be effective, accurate bacteriological diagnosis was a preliminary requisite There was no incompatibility between vaccine treatment and the employment of other therapeutic methods whether surgical or medical Knowledge of the principles of immunity and of the practice of inoculation should in future be part of the instruction in therapeutics given in the medical curriculum

Reviews and Notices of Books.

Organisation Physiologique du Travail By **JULES AMAR**, Docteur ès Sciences Directeur du Laboratoire des Recherches sur le Travail Professionnel au Conservatoire National des Arts et Métiers With 134 illustrations Paris H Dunod et E Pinat Pp 374 Price 18 fr

THIS volume represents part of the work which M Jules Amar has been carrying on at the Conservatoire National des Arts et Métiers at Paris since 1912 and for its full understanding requires to be read in conjunction with his book 'Le Moteur Humain et les Bases Scientifiques du Travail Professionnel" M Amar has been inspired by the work of Frederick Winslow Taylor, an American mechanical engineer, who from an artisan became a factory owner By effecting improvements in the tools and methods employed by his workmen the output of his works was very considerably increased

In his "Principles of the Scientific Organisation of Work" Taylor complains that the physiologist has not paid sufficient attention to "fatigue.' M Amar has now remedied this omission The volume contains a description of the various methods he employs to investigate "fatigue' The phenomena of the contraction of muscles are recorded by a dynamograph, the muscular force is conducted by a spring which presses on an indiarubber ball connected by tubing with a Marey's tambour provided with a writing style which registers on a revolving cylinder the amplitude of the movements of the muscles Dynamographs are fitted to various tools including the file plane and shovel, the force, rate and precision of the movements *involved* in their use can thus be *registered* The energy expended is determined from the consumption of oxygen during respiration, to measure this he uses a eudiometric apparatus attached to a respirator fitted over the workman's mouth Deductions are made from cardiograms and pneumograms, curves are made of the variations of pressure of the expired air, the ratio of the duration of expiration and inspiration affords useful data The ergometric (bi)cycle serves to measure the fatigue of the legs and arms, M Amar s modification of the Mosso chirograph is used to investigate the fatigue of the muscles moving the fingers or wrist, the *poire dynamographique* (a hollow indiarubber ball fitted with air, the pressure of which can be varied), measures the grasping power of the hand, the arthrodynamometer measures the amplitude of movements of joints and the force of the muscles producing the movement

In this book M Amar does not go closely into the application of his principles to each of the various trades, he contents himself with urging that the use of his registering tools will indicate to the workman various faults which should be overcome He emphasises the advantages of the correct position to assume when using a file, the cinematograph, he suggests, will indicate this position and help to eliminate any unnecessary actions during work But the author gives a complete account of the adaptation of his methods for the functional and professional re education of crippled soldiers, not only this, but he works out in a convincing manner the scientific principles of artificial limbs By means of his dynamographic platform he analyses the movements of artificial legs, and is able to indicate the models which most nearly allow of the reproduction of the normal movements during walking He gives a description of the various forms of artificial limbs he considers most useful both for the workshop and office An account of his *pince universelle, anneau universelle*, and hook is included He is an advocate for fitting elaborate mechanical hands even to men who have suffered an amputation at the shoulder, when the movements of the hand are produced by the expansion and retraction of the chest wall during breathing A wide difference of opinion exists in France as to the value of such elaborate appliances M Amar s results lends support to those in favour of them Possibly their provision is justified when limited to selected men of better education whose work is of a light nature and who are prepared and in a position to go to a certain amount of trouble to keep their appliances in order

The book is written for the French general public M Amar has therefore included matters of interest primarily to Frenchmen as well as elementary physiological considerations When dealing with general matters he is somewhat diffuse but no such fault can be found when he gives us in book form the papers he has written on his own work The book is the work of a pioneer and patriot, who is evidently gratified that the direction his life's work has taken has suddenly become of immediate value to the crippled defenders of his country

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JOURNALS AND MAGAZINES.

Journal of Physiology Edited by J N LANGLEY Sc D, F R S Vol. LI, Nos 1 and 2 Cambridge University Press 1917 Pp 1-110 Price 8s —On the Summation of Propagated Disturbances in the Claw of Astacus, and on the Double Neuro Muscular System of the Adductor, by Keith Lucas A melancholy interest attaches to this communication for it is the last contribution to physiology made by that assiduous observer, Dr Keith Lucas, who at the early age of 37 died on Oct 5th, 1916 as the result of an aeroplane accident There seem to be two separate neuro-muscular systems belonging to the adductor muscle—one for the slow movements of the claw and one concerned only with rapid closing If the nerve to the adductor muscle is excited with a single stimulus the muscle may give either a small, slow contraction or a quick twitch according to the strength of the stimulus used The excitable substance whose stimulation leads to the twitch has the shorter excitation time and needs Richet the stronger current if the current duration is long described the summation phenomena in the claw of astacus, which belong to the type of "summation of propagated disturbances" in which the first stimulus though apparently The ineffective does send an impulse down the nerve impulse fails to cause a contraction of the muscle but ensures the success of a second impulse following it at a suitable interval of time —The Excretion of Urea and Sugar by the Kidney by Arthur R Cushny The commonly accepted view is that urea is a specific constituent of the urine and that a specific secretory activity is required for its excretion which does not seem to be required in the same way by the inorganic salts The physical properties of urea do not appear to justify its being treated as apart from the other constituents of the urine The concentrations of sulphates in the blood and urine bear an almost equal ratio with those of the urea, and the same is true of the inorganic phosphates and creatinin Even sugar, when it escapes by the kidney may undergo a concentration of from 0 2 per cent in the blood up to 10 per cent or more in the urine, and thus nearly rivals urea in extent of change The only sense in which urea can be accorded a special position in the urine is that it is normally present in large amount Heidenhain drew an analogy between the excretion of sodium sulphindigotate and that of urea His views, however, in regard to the passage of dyes through the kidney epithelium can hardly be maintained against the fact that dyes appear in the urine long before they occur in the interior of the cells, and that the maximum of staining of the epithelium takes place after the greatest concentration of the urine has passed off Still, the view is widely held that the concentration of the urea takes place in the tube cells quite independently of the activity of the glomerular capsule The author repeated Heidenhain's experiments, substituting chemical estimation of the urea in the kidney, finding that 1 When the spinal cord is severed no accumulation of urea occurs in the kidney, and, similarly phloridzin ceases to cause accumulation of sugar 2 Urea and sugar thus are not excreted in the way Heidenhain describes for the sulphindigotate of sodium, and all conclusions drawn from this analogy are erroneous The site of secretion for urea and sugar therefore remains undetermined, and experiments on mammals offer no grounds for supposing that it differs from that of the other constituents of urine —On the Localisation of the Calcium and Potassium Salts concerned in the Mediation of the Action of the Vagus Nerve on the Heart of the Frog, by W Burridge 1 Faradisation of the base of the frog's ventricle gives effects predominantly inhibitory when the heart contains blood and effects predominantly excitatory when the heart contains Ringer s solution 2 After treatment of the perfused frog's heart with potassium salts the capacity to be inhibited from the vago sympathetic trunk is lost and the capacity to be inhibited by the faradisation of the local nervous mechanism is regained 3 The capacity to be inhibited from the vago-sympathetic trunk following treatment with potassium is restored by calcium 4 It is suggested that calcium salts mediating the action of the vagus nerve on the frog's heart form an integral part of the structure, whatever it may be, on which nicotine acts 5 The potassium salts concerned in vagus action are situated at the "nerve endings" in the muscle —Some Observations on the Action of Guanidine on Frog's Muscle, by John S Meighan Other observers have studied the effects of this base and its neutral salts The spontaneous twitches it evokes in frog s muscles are less with higher than lower concentration of guanidine solutions Its ' curare," or paralysing, effect on nerve-endings in muscle seems to be due not to its action on muscle fibres, but either on the nerve endings or on the ' receptive substance" supposed by Langley to exist in proximity to the endings A moderate rise of temperature (5° C) increases its effect, but a great rise (25° C) does not completely destroy it The effect of cooling seems doubtful.—The Volume of the Dead Space in Breathing and the Mixing of Gases in the Lungs of Man by A Krogh and J Hindhard After a historical account of the measurements of the bronchial tree of a corpse (=140 c c) by Zuntz and Loewy in 1904 and the sampling of alveolar air by Haldane and Priestley s method (1905), and by other observers, the authors state that there is a clear and debatable issue between Haldane—who maintains that the dead space is a physiological and not an anatomical conception—and their own views They hold that the air in the air sacs (as well as in the atria) is not at the end of inspiration of the same composition throughout because the air inspired is incompletely mixed with the air previously contained The mixing takes place chiefly by diffusion and requires a certain time We must refer the reader to the original text for the methods used The following are the authors' conclusions 1 Just after inspiration the gas mixture in the lungs beyond the dead space (the alveoli taken in the widest sense of the term) is not uniform throughout The differences are usually slight but with deep and slow breathing they become considerable With deep and rapid breathing, as in muscular work the mixing seems to be again improved. 2 In attempts to determine the dead space of the air passages these facts must be taken into account if reliable results are to be obtained The very large dead spaces determined by Haldane and by Henderson and his collaborators are unreal 3 The dead space of a human subject is constant at pulmonary inflations below the resting position of the chest At larger inflations it increases gradually With a maximum inflation of the lungs the increase may amount to 100 c c 4 No evidence has been obtained of any unequal ventilation of different lobes of the lungs 5 The composition of the alveolar air should in most circumstances be determined preferably by calculation from the expired air, the volume of the expiration, and the dead space, When the breathing is deep the resulting increase in dead space should be taken into account, but during muscular work very slight errors only will usually result from not doing so, because the increase is small compared with the depth of respiration The direct sampling according to Haldane and Priestley, has in certain cases given rise to fallacious results 6 Our method of examining the composition of the alveolar air by a series of consecutive samples from the same breath is open to objections The errors are probably not large 7 The errors caused by incomplete mixing of the pulmonary gases in our circulation rate determination are much too small to be perceptible in experiments on normal lungs —The Mechanism of Cardiac Acceleration by Warmth and by Adrenalin, by C Lovatt Evans Much work has already been done in this direction by using the heart-lung preparation of a mammal as devised by Starling The factors which tend to diminish or increase metabolism and the efficiency of the heart are considered, analysed, and tested experimentally It was found that 1 The oxygen usage per beat although approximately constant over small ranges of temperature in the neighbourhood of the normal body temperature is increased at either extreme of temperature 2 The cause of increased metabolism at abnormally low temperatures appears to be dilatation of the heart with increase of the active surface, other factors are operative in both increasing and in diminishing this effect, the resultant only being apparent Similar considerations apply to the raised metabolism at high temperatures 3 The effects of adrenalin cannot be traced to such purely mechanical factors, the increased metabolism is apparently due to a direct and specific effect in increasing and accelerating the chemical changes associated with contraction —The Relations of Carbon Dioxide in the *Blood*, by George A. Buckmaster Very conflicting views are held concerning the state in which carbon dioxide exists in blood The statement of Pflüger in 1864 that a constituent of blood is capable of liberating carbon dioxide from the carbonates of that liquid is mentioned in most text-books on physiology The author was led to doubt whether a carbonate could possibly be decomposed by hæmoglobin or any protein or amino-acid of the blood If this view is found to be experimentally correct, then the total liberation of CO_2 from blood cannot be due to a protein It was found that neither hæmoglobin nor, indeed, any other constituent of the defibrinated blood is capable of freeing CO_2 from sodium carbonate and the same is equally true for solutions of the bicarbonate The author attributes any CO_2 which is evolved as being dependent on the development of acidity in the blood

Maternity and Child Welfare Vol I, No 3 London John Bale, Sons, and Danielsson Limited, 83–91, Great Titchfield street, W 1 Price 6*d* net —The third number of this useful periodical contains interesting articles by Lady Barrett, M D on the Midwife and her Share in the Protection of Motherhood by Dr Amand Routh on the Ordinary Diseases of Women which may Affect Pregnancy, and by Mr N Bishop Harman on Ophthalmia Neonatorum Shorter articles on Infant Welfare Centres, Food Values and the Training of Health Visitors are also included while the Annotations and Abstracts and Notes give summaries of some of the problems facing the medical and social worker among mothers and children and the attempts that are being made to solve them The idea of publishing sectional map of the British Isles showing the distribution of infant welfare centres, and the extent to which the work of each is developed and the amount of municipal help obtained, is a real inspiration This magazine is "edited in the interests of the mother and young child by a member of the medical profession, with the help of an advisory committee representing the various groups of workers," and is an excellent example of a form of literature for which there is much need The articles are written by experts from a scientific point of view, but in such language as to be perfectly intelligible to the voluntary worker (usually a layman) as well as to the nurse or health visitor

The Child Vol VII, No 6 March, 1917 —This number contains an important paper by Dr M F Boulenger on the management of the exceptional child in Belgium Before the war Dr Boulenger was medical director of the farm school for abnormal children at Waterloo (Belgium), and is now occupying a temporary post at the Darenth colony for defective children in Kent Abnormal children in Belgium were until 25–30 years ago accommodated in the lunatic asylums, while the first special institutions were prison like buildings, without classrooms or workshops, surrounded by treeless, macadamised airing courts In these wretched places children with faulty habits were tied all day on commode chairs, lying at night on mattresses reeking of ammonia. All this was changed by the pioneer work of two physicians who had studied pedagogy previously to their medical graduation, Professor Jean Demoor and Professor Auguste Ley, who, between 1900 and 1906, were the means of founding centres for special education in Brussels and Antwerp, and later in Ghent, with after care associations which arranged for the apprenticing of the boys and girls on leaving school The Société protectrice de l'Enfance anormale, with the late Minister of Justice, M Jules Lejeune, as its president, was successful in obtaining by its active propaganda, special tribunals for juvenile delinquents Dr Boulenger himself put forward the idea of the farm school in 1901 and pavilions were being erected on a large site in the province of Brabant when war broke out Temporary courses for teachers had, however, already been given in the province in 1914 Dr Boulenger generously acknowledges the influence of French and English ideas on his Belgian work he was himself a frequent visitor at the special schools in this country and looks forward in confidence, with the resumption of Belgian national life after the war, to further rapid development in his own country of the care and training of abnormal children

Reports and Analytical Records

FROM

THE LANCET LABORATORY

THE WHITE WINES OF ANJOU AND TOURAINE (FRANCE)

(ALEXANDER WOOD CAMPBELL, AND CO, 62, CRUTCHED FRIARS, LONDON, E C)

FOR medicinal or special dietetic purposes in which a light agreeable stimulant seemed desirable a preference has long been given to the German white wines of the hock and Moselle type (still and sparkling) They were chosen for their low alcoholic strength, their freedom from colouring matter, their small sugar content, and their low degree of acidity But according to a recent examination we have made of some specimens, it is quite evident that certain of the French white wines answer these requirements equally well The white wines, in fact, of Touraine and Anjou are in some respects better They are light, elegant and practically non acid We have received some 20 examples of these wines, a few of which we have submitted to analysis as giving a fair idea of their general composition and quality

(1) *Touraine Supérieur* (still) —Alcohol by volume 11·61 per cent extractive matters 2·55 per cent mineral matter 0·25 per cent sugar 0·27 per cent volatile acidity reckoned as acetic acid 0·12 per cent. fixed acidity reckoned as tartaric acid 0·82 per cent

(2) *Anjou Supérieur* (still) —Alcohol by volume 9·86 per cent extractive matters 1·55 per cent mineral matter 0·20 per cent sugar 0·26 per cent volatile acidity reckoned as acetic acid 0·09 per cent fixed acidity reckoned as tartaric acid, 0·86 per cent

(3) *Vouvray tête* (still) —Alcohol by volume 12 05 per cent extractive matters 2 40 per cent. mineral matter 0 20 per cent sugar 0 45 per cent volatile acidity reckoned as acetic acid 0 15 per cent fixed acidity reckoned as tartaric acid 0 71 per cent.

(4) *Touraine Supérieur* (sparkling) —Alcohol by volume 8 18 per cent. extractive matters 5 35 per cent mineral matter 0 15 per cent ; sugar 3 33 per cent volatile acidity reckoned as acetic acid 0·06 per cent , fixed acidity reckoned as tartaric acid, 0·67 per cent

(5) *Anjou Supérieur* (sparkling) :—Alcohol by volume, 12·05 per cent , extractive matters, 5 54 per cent mineral matter 0 14 per cent sugar 4 16 per cent volatile acidity reckoned as acetic acid, 0 07 per cent fixed acidity reckoned as tartaric acid 0·65 par cent

(6) *Vouvray tête* (sparkling) :—Alcohol by volume 13 43 per cent extractive matters 4 49 per cent mineral matter 0 19 per cent sugar 2 50 per cent volatile acidity reckoned as acetic acid 0 12 per cent fixed acidity reckoned as tartaric acid 0 51 per cent

These results bear out fully the claims that these French wines are, in regard to special dietetic requirements, not at all inferior to the German produce, and in certain respects they are superior This, at all events is the case in regard to a minimal amount of sugar, alcohol, and especially of volatile acid in the still wines, while the higher proportion of sugar in the sparkling wines is due to "liqueuring" These points may well deserve attention now that the supply of German white wines is cut off

ANTIPHLOGISTINE

(THE DENVER CHEMICAL MANUFACTURING CO , NEW YORK. LONDON AGENCY ST ANN'S ROAD, BOW, LONDON, E)

Antiphlogistine has been well described as a scientific mud which is externally applied hot and thick as a cataplasm for the relief of inflammatory and congested conditions In connexion with its application for this purpose we have already referred to this preparation, which is composed of a finely refined earth compounded with glycerine, iodine compounds boric and salicylic acids and certain antiseptic essential oils We are now informed that a poultice of hot antiphlogistine applied to the nose relieves the "stuffed up" feeling so often characteristic of the common cold In rhinitis and coryza favourable results are recorded. Applied over the nose in the case of a common cold at bed time, the patient is said to secure relief of the distressing symptoms, a restful night, and a general feeling of well being in the morning The combined application in this way of heat along with antiseptic oils and the like, may well produce an alleviation of such troubles

New Inventions

AN AUTOMATIC INTERMITTENT WOUND IRRIGATOR

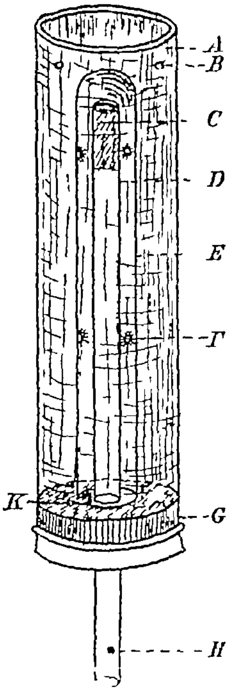
THE apparatus was originally intended for the intermittent irrigation of deep and infected wounds, and more especially of such wounds as are associated with compound fractures In dealing with these wounds a mode of treatment associated with the name of Carrel has received general use and recognition This treatment essentially consists in introducing into the crevices of the wound a number of rubber tubes each of about ⅛ inch diameter, gauze packing is lightly introduced into the wound around the tubes At regular intervals the tubes are irrigated through with a solution of eusol

Hitherto the irrigation was secured by regular manual irrigation with a syringe This method involved a considerable waste of time, much disturbance of the patient, and frequently the inducing of pain and irritation This apparatus was produced with a view to overcoming these disadvantages, and its origin is largely owed to Corporal Studd R A M C The apparatus embodies two simple mechanical principles (1) The property possessed by two adjacent and connected fluids of finding a common level , (2) the principle of the simple syphon

The original model (A) was composed of an outer glass tube and an inner bent tube As the outer jacket filled with fluid, the fluid rose to a corresponding level in the open limb of the inner bent tube, and when the bend was reached the syphon action was commenced and the outer tube emptied of fluid A simple air valve in the efferent limb of the bent inner tube obviates the occurrence of an air block

The times at which the irrigation will occur can be regulated by varying the rate at which the drip feed of eusol from the reservoir flows into the outer tube The interval will be the time which the fluid takes to reach the level of the bend The efferent tube is connected up by Y branches with as many of the rubber tubes as are required for the irrigation of the wound

FIG 1



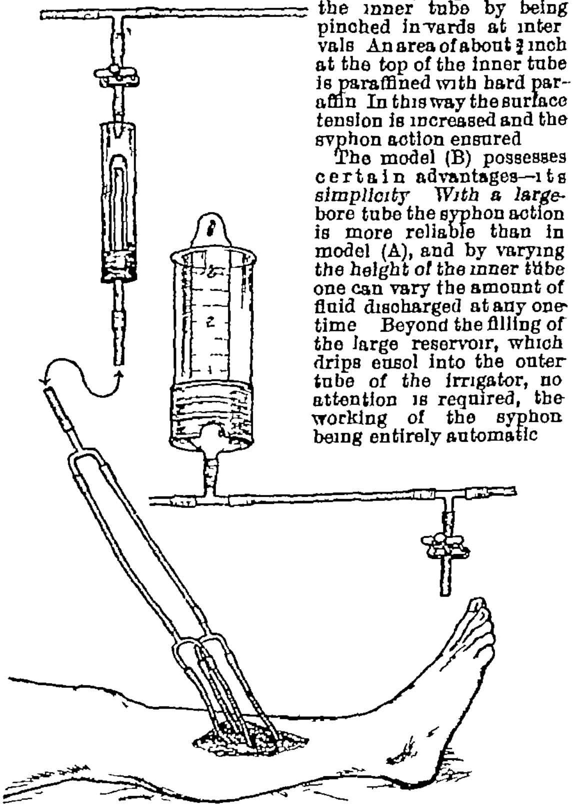
Syphon action irrigator Lieutenant Dunn s modification *A* outer glass tube *B* holes for suspending vessel *C* paraffined top of tube *D* inner glass tube *E* inverted test-tube, *F* pinchings in test tube to keep inner tube in position *G* rubber cork *H* air valve *K* inlet in lower border of test-tube

Lieutenant Dunn, R A M C , No 3, Mobile Laboratory, has produced a modification of the original model, and has kindly given us permission to include the description of the modification The apparatus is shown in *Fig* 1

A syphon is made by inverting a test-tube over a straight inner tube, and inlet is furnished at the open inverted end of the test-tube The test-tube is kept in position over the inner tube by being pinched in-vards at intervals An area of about ¾ inch at the top of the inner tube is paraffined with hard paraffin In this way the surface tension is increased and the syphon action ensured

The model (B) possesses certain advantages—its *simplicity* *With a large-bore tube the syphon action* is more reliable than in model (A), and by varying *the height of the inner tube* one can vary the amount of fluid discharged at any one time Beyond the filling of the large reservoir, which drips eusol into the outer tube *of the irrigator*, no attention is required, the working of the syphon being entirely automatic

FIG 2



Showing the method of distribution of the fluid from a central reservoir which may supply a *number of irrigators.*

It should be added that the tubes leading from the syphon should be made as perpendicular as possible, and that the cross section of the *distal* tubes should not be more than that of the proximal ones

An apparatus employed has been found easily adaptable to beds for the suspension and direction of the irrigator The height angle, or position of the *irrigator* can be variously altered

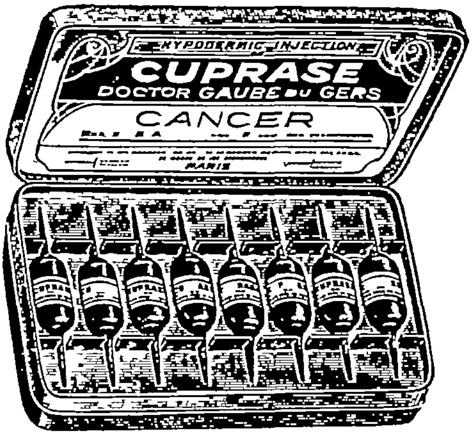
J FRASER, M D , F R C S Edin
Captain R A M C
S D STUDD, Corporal R A.M.C

CUPRASE

For the Medical Treatment of CANCER.

xtract from Proceedings of the Royal ociety of Medicine February 1913 — Dr George Herschell, comparing lectric and chemical colloid copper ated .. Chemical colloid appears o give the best results In the following ases chemically prepared colloid was sed Experimentally it has been roved (1) That particles of colloid opper can be demonstrated in the ranulations of cancerous growths after wo or three injections of the colloid nd clinically (2) There is invariably reat relief from pain (3) Appetite and rength return and the patient puts on esh (4) There is in many cases a iminution in the size of the tumour) The injections are absolutely non-oxic although in many cases an in ammatory reaction is manifested in he cancerous growths

'As regards my own personal experi nce in the use of this method of treat ent in addition to my own cases I ave had an opportunity of observing he effects in the practice of some of my edical friends and in nearly all cases he progress of the disease appeared to e arrested.



CUPRASE is a Colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid

This treatment has passed far beyond the experimental stage The numerous clinical reports from Doctors of repute in various countries give cases of a great variety In all of these **pain has been eliminated**, and in a good percentage **cures are claimed**, and in no instance **any undesirable effects**

LITERATURE and PRICE LIST on REQUEST

THE ANGLO-FRENCH DRUG CO, Ltd

(Late M. Bresillon & Co)

Phone: Holborn 1311 **Gamage Building, Holborn, London, E C 1** Telegrams 'Ampsalvas London'

IODARGOL

Special Colloidal Iodine.

NON-TOXIC PAINLESS	FOR THE TREATMENT of Gonorrhœa Acute and Chronic Urethritis Of Old Standing	DIFFUSIBLE ANTISEPTIC ANALGESIC

Cystitis and the Serious Complications of Gonorrhœa

In Ampoules and Phials for Injection or Soluble Bougies

IODEOL

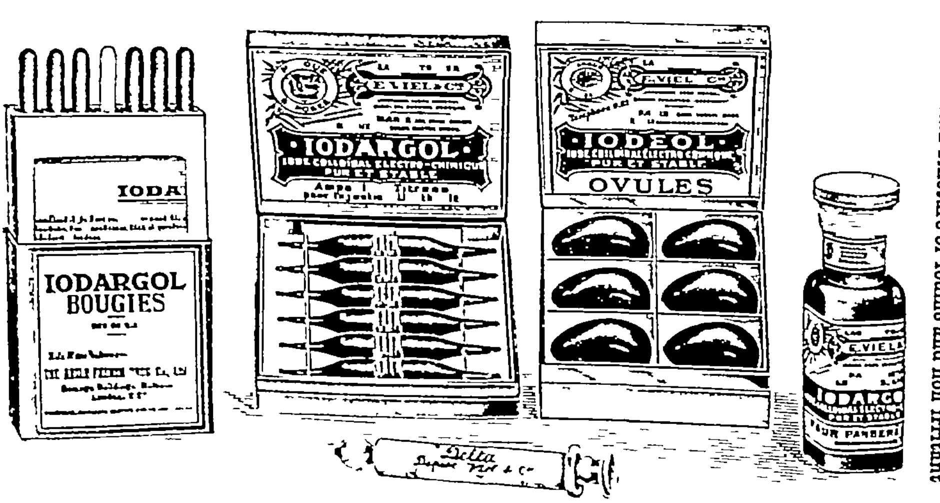
Electro-Chemical Colloidal Iodine

IODEOL CAPSULES (Internal Administration)

Perfectly tolerated Never cause Iodism Give off free Iodine Each capsule contains 4 grains of Colloidal Iodine

FOR GYNÆCOLOGY (Iodargol Ovules)

The Ovules slowly discharge the Iodine which penetrates deeply into the vagina mucous membrane giving rapid relief from congestion and pain Destructive to micro-organisms



IODEOL (Hypodermic and Intramuscular Injections)

Gives highly satisfactory results in the various forms of Tuberculosis The general improvement in the patient s condition is of a permanent character IODEOL for External application, Ten times more active than Tincture of Iodine and non irritant

PERSODINE

(LUMIERE)

Active, Tonic and Digestive Stimulant.

Composition

PERSODINE is in tablet form and consists principally of pure alkaline persulphates specially prepared in the Laboratories of the Brevets Lumiere Company These persulphates of Sodium Ammonia form a stable compound which has energetic oxidising properties being quickly decomposed in the presence of organic substances, and liberating sulphuric acid, oxygen and a neutral sulphate

Properties

Lumiere PERSODINE has made it possible to utilise the highly powerful oxidising properties of the alkaline persulphates which it had not been practicable to do until then

It is a eupeptic preparation which has a distinctly beneficial action on the nutrition It increases the appetite promotes dige tion and assimilation and consequently brings about an increase in weight.

Professor NICHOLAS reports very satisfactory results by the use of PERSODINE in cases of Anorexia, the early stages of Tuberculosis and *convalescents recovering from acute illness*

Dr GAREL published his experiences with PERSODINE in Hospital work from which the following is an extract —

' Our first experiments were solely carried out on patients in the *early stages of tuberculosis who suffered from loss of appetite* Little by little, encouraged by the splendid results obtained with these patients we decided to prescribe this remedy for very advanced cases of tuberculosis persons for whom there was no hope of recovery The most reliable results with PERSODINE will be obtained with patients in the early stages of tuberculosis even in the second period We have however, seen some fairly advanced cases greatly benefited by this remedy In short in most cases the action exerted is identical the appetite is excited the digestion becomes easier The general condition improves in every way *this is the almost uniform result of* the application of this remedy

Dr G MILLIAN, in a lengthy work on PERSODINE concludes as follows —

' PERSODINE may also find a place in the materia medica Its tonic and eupeptic action are its chief property it therefore produces an improvement in the nutrition and an increase in weight

" Consequently PERSODINE is specially to be recommended in the case of patients in the early stages of tuberculosis and of persons recovering from some acute illness who do not satisfactorily regain the use of their digestive functions of surgical patients after an operation of those suffering from chlorosis neurasthenia hyperacidity combined with gastric debility "

Doctor BETUEL *of Paris* has also published in the *Presse Médicale* the observations made by him both in his private practice and under the guidance of the senior doctors BERGER and BARTH during their attendance at the Beaujon and Necker hospitals

He states: ' Our observations were carried out on patients suffering from tuberculosis chlorosis and neuroses on convalescents recovering from acute illnesses to whom we added two cases of fractured thigh and finally on cases of overstrain

Clinical observations enable us to state definitely —

1 That PERSODINE possesses incontestable tonic digestive properties.
2 That it is well tolerated by the stomach and that it corrects any defects of the digestive functions
3 That its a tion on the nutrition *is mostly shown by a fairly rapid* increase in the weight of the patient

Professor ALBERT ROBIN has confirmed the tonic action of the persulphates and expresses himself as follows in a communication addressed by him to the Therapeutic Society " of Paris:—

I *am fully convinced that the improvement*, which it is possible to obtain in cases of tuberculosis is entirely brought about by a stimulation of the appetite This fact has led me to study on other patients the aperient properties of persulphates of soda they may be utilized in a large number of cases where a morbid state prevails *persulphate is from this point of view an excellent remedy in half the* cases *in which I have prescribed it as a tonic it has given good results* "

Doctor LEMOINE, Professor of Clinical Medicine at the Medical School of Lille:—*

PERSODINE is to be recommended in the apyretic torpid forms of tuberculosis during the two first stages and more especially during the first, when it gives astonishing results

Besides cases of tuberculosis PERSODINE is also to be recommended under the most varied circumstances—Chloro-anæmia, convalescents recovering from acute diseases surgical affections hysteria neurasthenia, overstrain

Therapeutic Indications

Anorexia, Tuberculosis, Chloro-Anæmia, Neurasthenia, Rickets, Dyspepsia, Convalescence, &c, &c, and—in a general way—in every case where suralimentation is advisable

---

* *Technique et Indications de Médications Usuelles*, April, 1903

HEMOPLASE

(LUMIERE)

Hemoglobin in its Natural State —Iron in most assimilable form

Composition

HEMOPLASE is a protoplasmic extract from the blood corpuscles of healthy animals absolutely free from tuberculosis HEMOPLASE is guaranteed to contain no globulary stromas antiseptics or other foreign substance

HEMOPLASE is, therefore a total extract of the corpuscle contents It embodies integrally the elements elaborated by the living cell, diastasic ferments hemoglobin in the natural state

Therapeutic Indications

Malaria, Anæmia, Hæmorrhage, Tuberculous Affections, &c

HEMOPLASE is prepared for Intramuscular or Hypodermic Injection this is in liquid form put up in ampoules Also in Pills for internal administration This HEMOPLASE in the dry state contains 70/ of natural hæmoglobin

In either form HEMOPLASE is absolutely harmless

HEMOPLASE in Cases of Tuberculosis

Dr GELIBERT in his communication to the International Tuberculosis Congress (Paris 1905) pointed out in the most convincing manner the action of HEMOPLASE in cases of tuberculosis

The conclusions contained in this important study based on an experience gained by 1250 injections administered to 118 patients are as follows: The plasmo-therapeutic treatment exerts on the cachexias in general and more especially in cases of tuberculosis an influence which is both remarkable and which has seemed to us more active than that of any other therapeutic method. "

HEMOPLASE in Cases of Cachexias

It would not be *correct to consider HEMOPLASE* as being a specific treatment in cases of tuberculosis.

The majority of the favourable results which it furnishes in such cases are entirely due to the stimulation to the intensive regeneration which it provokes in the entire organism In truth HEMOPLASE is principally the remedy for cachexias of whatever origin (cancer paludism anæmia hæmorrhages convalescence, &c.)

Mr J CHEVALIER* stated:—

' *In this preparation the hemoglobin is contained in such a state that it is easily absorbed by the red corpuscles and not eliminated by nature through the kidneys like the other preparations of iron which have been tried by this method* "

Doctors DUMAREST and BAYLE in attendance at the Sanatorium of Hauteville, have made prolonged experiments with HEMOPLASE in cases of tuberculosis Publishing the results of their observations in the *Marseilles Médical* they conclude thus —

1 HEMOPLASE never causes any toxic or inflammatory symptoms

2. The action of stimulation and of general dynamogenic solicitation exerted by HEMOPLASE is most manifest. It is an excellent nutritive stimulant and may prove an economic remedy The appetite the strength and the general condition are subjected in a general way to a rapid and energetic impulse "

HEMOPLASE in cases of Chlorosis and of Anæmic conditions

Doctor LOVITT *of Lille* in his inaugural dissertation before the Faculty of Medicine of Lille (July 1909) under the heading: Therapeutic and Experimental Researches concerning Plasmo-therapeutics in cases of Chlorosis stated that:—

HEMOPLASE yielded him excellent results and in certain cases he was able to realise the superiority of HEMOPLASE over other remedies containing iron

HEMOPLASE increases the total contents in hemoglobin and consequently the number of corpuscles Its action is not alone effective in the treatment of chlorosis but the improvements it brings about are lasting contrary to the results of other remedies

In an article Medical Future " Dr VIGNE thus sums up the physiological reasons, explaining the remarkable efficacy of the Lumiere HEMOPLASE for anæmic conditions —

Introduced into the circulation either by the subcutaneous or the digestive method it abundantly supplies it with hemo bin and the blood lipoids

.. As we have seen part essential pr the life
of the blood corpuscles will l ssimilated b s hemo-
globin absorbed by the fa or most
vigorous blood vesicles rapid volum
their respiratory capacity rapidl
the resistance and to the glo blood c

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* Communication to the The of Paris

LITERATURE CLINICAL REPORTS and PRICE LIST on

THE ANGLO-FRENCH UG

(Late M. BRESILLO

'Phone: Holborn 1511 **Gamage Building, Holbor** C

THE LANCET.

LONDON SATURDAY, APRIL 21, 1917

The Centralisation of Public Health

THE Food Controller continues to issue recommendations with regard to limitation of our food consumption, implying that further drastic limitation is advisable or even, under the circumstances, necessary Wheaten flour is his most serious concern at the moment, and every patriotic citizen is adjured to reduce his use of this staple article of diet in whatever form, by 1 lb per week But there is no certain conviction in the public mind that these and other recommendations are consistent with the physical health of the community No authoritative statement is issued, whether in fact they entail a reduction in mere eating which will be of advantage to the majority of us, or whether, under stress of necessity, we are to enter on a period of slight under nourishment, with corresponding but inevitable loss of working efficiency Medicine knows well enough that desire for food is not a fair guide to the individual as to his need for food intake, but the public should be told this and similar generalities by someone in authority These and other kindred matters need at the moment, *intensive* study by experts, who are in a position to make their pronouncements effective Doubtless there is expert medical opinion at the disposal of the Food Controller's Department, but it is questionable whether the powers of that bureau are sufficient to give effect to the wide sweeping recommendations necessary, in fact, here and immediately we come upon an urgent ground for the centralisation of public medical matters in a Ministry of Public Health

The six State Departments which have at present duties to discharge in connexion with the people's health are the Home Office, the Local Government Board, the Board of Trade, the Board of Agriculture, the Board of Education, and the National Insurance Commission, to say nothing of Somerset House, which has charge of vital statistics, and the Food Controller's Department Those familiar with the medical aspects of legislation in the making will remember how naturally it has come about that so many different State Departments are concerned Assuming that our readers know the particular medical work for which the various Departments stand guardian, they will realise that if any one of these Departments is to take over the mass of the duties of the other five it will be either the Local Government Board, having the sanitary administration of the country under its control, or the National Insurance Commission, having for its charge the care in sickness of 14,000 000 subscribers, whose needs are administered to by a large proportion of the available medical men on the professional roll If a new State Department be not especially created it will be necessary to reform or adapt one of these two for the conduct of enormously increased labours Each has strong claims, the Local Government Board as the bureau of preventive medicine under the existing system, and the National Insurance Commission, already actively engaged in medical treatment and in the furthering of scientific progress through its Medical Research Bureau There is between the two bodies but little overlapping or disputed territory of influence, so that a junction could take place without dislocation of public business, it could be of the loosest possible nature in the beginning and designed merely to obtain for the health of the nation one presiding force, and a centre around which later activities would be grouped

Failing the creation of a new department, which we should prefer but which at the moment can hardly be looked for, we think that the cause of medicine, and therefore the welfare of the country, would be best served by constituting the Local Government Board the central authority for the health of the people Its existing functions are closely connected alike with medicine and with the life of the people, so that any other health organisation acting independently from it would be in perpetual contact with it, and the delays and expenses following upon recurring discussions might largely counterbalance the advantages to be derived from the possession of a central authority The Unionist Social Reform Committee, whose recent valuable pronouncement upon the health of the people we reviewed last week, arrived at a similar conclusion, and we add to the reasons for their faith, which are so excellently adduced in their report, a further one, for it may have real weight The Local Government Board is heavily burdened with multifarious responsibilities towards the State, and there is sound reason for believing that once the central office for the health of the people, organised under its ægis, were grown vigorous under its far reaching influence separation would quietly occur, and a new Health Department would take in the public mind its proper position as one of the great Government bureaux A separation of the Department of Health from the Local Government Board, which took place in this way, would have the advantage that to the separating body there would be naturally adherent as a sequence of the past association, all those medical activities which cannot now by some movement of violent readjustment be torn from the Local Government Board and handed to the National Insurance Commission, or any other body, while the surrender to the new Department by the other Government Departments of the medical cares, thrust upon them through well meaning legislation, designed to meet various wants as they made themselves felt acutely, would naturally follow And of such a Department the National Insurance Commission, with the modifications in its working that are certain to occur in the course of time, would form one complete-side, linked by its Bureau of Medical Research to what is progressive in medical thought and to practical therapeutics by its responsibility for the medical treatment of a third of the population With a great Department so constituted we need have no fear for the future of the general practitioner or for the health of the nation No amount of centralisation or coördination can alter the fact that the individual sick person must be treated by the individual doctor, but the task will be carried out more efficiently as the care of the health of the people is better organised

Bone Grafting

WHILST bone grafting in the past has been rarely called for, and then chiefly to restore bones destroyed by osteomyelitis or new growths, the scope for its employment at the present day has been greatly widened by the injuries produced by gunshot wounds It is, therefore, a matter of pressing importance to examine the facts underlying this procedure in order to estimate its possibilities and the best technique for securing success, and Mr E W HEY GROVES, who has just received the Jacksonian prize for 1916, had good reason for taking this as his subject in the recent Arris and Gale Lectures delivered before the Royal College of Surgeons of England It was, we believe, OLLIER who first demonstrated by experimental evidence the capacity of living osseous tissue for regeneration and the viability of whole and fragmented living bones when used as grafts BARTH pointed out later that the rôle of even living bone grafts was largely passive, the graft itself possessing little osteogenetic power AXHAUSEN, however, succeeded in showing that on all the free surfaces of a living graft, as also in some of its Haversian spaces new bone was laid down, thus establishing the advantages of the living over the dead bone graft MACEWEN carried further the principle of the viability of the bone cell, showing that this principle dominated the whole question of bone growth, the periosteum being a limiting membrane and the underlying osteoblasts the osteogenetic factor It cannot, however, be said that the vexed question as to the functions of the periosteum has yet been finally settled MACEWEN'S experiments, which have been confirmed by numerous observers, mostly in America, prove that it has no independent osteogenetic rôle, but there is considerable body of evidence to show that the structure is nevertheless of great value in the transplantation of bone Probably under these conditions it acts as a vasoconductor and as a matrix for new bone cells

From a practical point of view, it is generally admitted that living autogenetic bone, with its periosteum if possible, should be used for grafting, but there are many points of detail which have been submitted to experimental study by HEY GROVES A graft may be fashioned as a peg and used as an intramedullary bolt This is a very unsatisfactory method If the graft is driven tight it remains indolent and inactive or breaks and allows the fractured bone to be displaced If it is loosely placed it will only establish vital relations when the bed in which it lies remains undisturbed by movement In other words two conditions essential for rapid vital success in bone grafting—viz, firm fixation and rapid vascularisation of, the graft—cannot both be secured in the intramedullary method, which is, moreover, mechanically weak On the other hand, living grafts rapidly establish vital union with a living bone bed, if they are fixed on to the cortex of the bone, so that they can be firmly attached and at the same time quickly acquire a blood supply from the soft tissues around In order to appreciate the conditions desirable for successful replacement of bone tissue it is essential to recognise that though living grafts may be viable, yet this viability is of a very limited character The osteoblasts on the surface of the graft do under favourable circumstances proliferate They contribute to that very narrow zone of new tissue which eventually joins the graft to its bed, and at a later period they may take part in the general increase in thickness which the graft undergoes But for the most part the bone graft, whatever may be its source, is a passive agent, differing from a metal plate chiefly in the fact that it finally becomes a part of the living tissues It has little or no capacity for rapid bone formation If, therefore, it is to replace a part of the skeleton which is lost it ought to be as large and strong as possible, and very firmly fixed in its place If living bone used as a graft could be made rapidly to produce new bone—i e, callus—then the matter would be quite different from what it is Then we should select a porous, vascular, cellular bone like a rib, divide it up into splinters or chips, laying these in the vascular bed where bone is lost, and keeping the part at rest for the same length of time as is required for the repair of a fracture, with the expectation of finding at the end of this time a regenerated bone formed by new callus But this is exactly what does not happen A graft simply laid loosely in soft tissues remains for a time and then slowly becomes absorbed A graft firmly connected with living bone grows to it, but not for many months does it show active osteogenesis The more a bone graft is divided up into chips the less certain is its survival or its growth Bone chips laid in a thin layer on a raw bone surface may quickly become the centre of callus formation, but the same chips filling a large bone gap simply remain indolent or become absorbed, because the majority of them have no direct contact with the only kind of tissue which can support them Even MACEWEN, who is responsible for the idea of the osteogenetic value of small bone fragments, admits that he could not make bone dust grow, though he attributes this to the injury of the bone cells by heating Unfortunately, however living bone dust is produced it is found to retain such feeble capacity for bone reproduction as to be quite worthless The ruling factors appear to be these the union of a living bone with its bed is at first by means of a cellular granulation tissue which ossifies comparatively slowly This union is always accompanied by a process of rarefaction of the adjacent bone tissue, which whilst it lasts is a source of weakness Therefore the first "taking" of the graft and its final incorporation with the skeleton will be greatly aided by the extent, the accuracy, and the firmness of contact between the old and the new tissues If the part concerned is the spine or the skull, where little or no movement of the bone is possible, then correspondingly little suture is required But if the graft is to fill a gap in a tibia, femur, or humerus, then mechanical fixation is a matter of the utmost importance There has quite rightly been a reaction against the routine plating of fractures, but because metal plates and screws are only desirable as temporary suture agents there is no reason to ascribe to them an inhibitory influence on bone growth

No doubt the most ideal bone grafting is that which, like the joiner's "dovetail" work, implies an exact fitting of one part into another so that no other fixation is necessary But this is seldom possible in the repair of long bones Fixation, then, should be by nails, screws, or wire, and, if the size of the bone will allow, by ivory pegs or bolts The alternative to this is the use of animal ligatures only, supplemented by extensive plaster of Paris splinting But this method is very insecure and uncertain in the case of the long bones, and the long immobilisation by plaster does everything to retard vascularisation and osteogenesis in the new tissues The experimental comparison of dead and living bone pegs, when these are used as nails driven into living bone, reveals the fact that they both behave in exactly the same way The organic union between the peg and its bed seems to be as speedy and as firm in one case as in the other There would appear, therefore, to be no object served by making bone nails for fixation purposes out of the patient's own tissues when ivory nails can be accurately prepared beforehand In clinical practice all these principles are of the utmost importance Grafts have to be carefully planned, fitted, and fixed if they are to give speedily successful results Apart from the possibility of homoplastic grafting, which presents many practical difficulties, the best bone to use is the patient's own tibia, from the mesial surface or crest of which a long and strong graft can be prepared It should considerably overlap the gap which it has to fill and be made to fit into slots in the ends of the bone to be repaired, and there fixed either by ivory bolts or nails or by wire

But in the repair of gunshot wounds of bones, unfortunately, there are other elements which very gravely complicate the problem These are latent sepsis, the injury of the soft parts, and the presence of large scars For months after a wound has healed, especially that of a septic comminuted fracture, the tissues harbour the organisms of sepsis, which may flame into activity if the wound is reopened To avoid this disaster a period of three to six months should be allowed to elapse before grafting, and by means of massage, active and passive congestion, the tissues may be either cleared of their infection or made to declare the presence of pyogenic agencies In important cases it is indeed, wise to do a preliminary operation for the clearing out of debris and the removal of scar tissue, and to postpone the implantation of bone for another considerable interval unless this preliminary operation heals quite smoothly Large superficial scars are a great source of danger They will almost inevitably slough away after any plastic operation Therefore either before or after any grafting operation such scars must be replaced by sound skin, and eventually the graft ought to be buried in muscle or fascia, so that it does not immediately underlie the skin wound In its practical aspects bone grafting as applied to the treatment of gunshot wounds is so new and important that all surgeons engaged in this work should be urged to publish all their cases, bad and good alike, in order that a sound opinion and practice may result from their experience

Professional Organisation among Medical Men

WE are accustomed to hear from medical men that their profession is an unorganised body, and, therefore, at the mercy of the politician, who can always obtain his way from the whole by playing off some section against the others We are equally familiar with the complaints made on political platforms, or even in the House of Commons, that the medical profession is such a perfectly organised ring that it can impose its will upon the legislature of the country Of course, each statement is inaccurate, and when we say that a practical consensus of medical opinion has great weight, but that circumstances seldom elicit such a consensus, we have put the position in fairly correct terms That this might well be so will, we think be the opinion of our readers, when they study the section upon medical organisation, which will be published immediately in a supplement of the *New Statesman* dealing with professional associations The authors of this section go very fully into a complicated story, and have succeeded in making it clear, though unfamiliarity with some of the details betrays them now and again into incorrect generalisations The Medical Act of 1858, for instance, has never been transformed to include the ideals of the earlier medical reformers, for so far from creating one portal of entry to the profession, the number of portals have been steadily increased A well deserved compliment is paid to the energetic tactics of the British Medical Association, whose complicated machinery is carefully explained—so carefully that the analysis of the constitution will be useful, perhaps, to many of its members The most interesting section is the one dealing with the relations of the doctor to the community, wherein the reasons dictating the professional attitude are well analysed and, we think, fairly handled, though in one or two places the particular difficulties of the medical man towards a public, which cannot be expected fully to appreciate the basis of his conduct or practice, are not brought out We strongly recommend the whole article to our readers as forming a useful synopsis of their professional position, made from outside their ranks

Annotations.

"Ne quid nimis"

THE PREVALENCE OF MEASLES

MEASLES has interfered much with the amenities of civil and political life during the last few weeks, and-there is a widespread impression that it has been more prevalent and more severe than in previous years Within the compass of a single week 87 deaths from this disease have been recorded in London, 18 in Manchester, and 19 in Birmingham, while epidemics have been reported from most other large towns School authorities have in many places been obliged to take action infant schools in Dublin were closed early in March and several of the public schools in this country were obliged to take the same course Measles presents indeed to the school medical officer a problem of much complexity which is likely to claim attention for some time As was shown by Dr J H Thursfield in the Local Government Reports for 1912–13, the serious pulmonary complications of measles are due to a mixed infection or one superadded to the primary infection It is obvious that where large numbers of cases occur in an institution there is an increased opportunity for the individual case to find a secondary infection to which he is susceptible Under these conditions a comparatively rare complication such as mastoid infection may become frequent in an institution where measles is prevalent and one such secondary infection present To the school authorities it would be a great convenience if pupils arrived immunised against the disease in the only way at present known, that of having already had an attack As 90 per cent of the mortality from measles occurs in children under 5 years it is highly advisable to protect them from infection up to this age, although in the mortality from measles at any age it should be remembered that sanitary conditions play the leading rôle In the year 1914 while the death rate from measles per 1000 living for London as a whole was 0 31, that for Shoreditch was 1 02 and for Hampstead 0 02, or one fiftieth of the mortality in the more crowded area It has been estimated that in general the mortality from measles of children among the well to do classes is only one fourth what it is in poor households But whether children from the age of 5 to 10 years should be protected from sources of infection with the same care is a matter on which opinions may well differ Unlike scarlatina, measles appears to be equally infectious at any period of life up to an advanced age The chances of escaping exposure throughout life are remote, and the period of election might therefore, for many reasons, be the pre school years So acute has been the course of the disease amongst an entirely susceptible population, as in the classical examples of the Faröe and Fiji outbreaks, that some authors have assumed a degree of hereditary immunity among the general population handed on from parent to child In harmony with this view is the admitted infrequency of measles in infants up to the age of 3 months, and a recent observation by Dr Charles Herrman, of New York, that infants at a slightly greater age (3–5 months) contract the disease in such a mild form as to produce no effect on their weekly weight chart These characteristics of the epidemiology of measles demand further study, which should lead to an advance in our knowledge of the best methods of avoiding any considerable mortality Prevention of the disease itself can, however, hardly be hoped for until the nature of the measles infection has been discovered

BREAD ECONOMY

AN exhortation to economy in bread is at the moment the Food Controller's message to the nation in regard to the food supply We are asked to reduce our bread ration and to forgo the use of wheat stuffs at afternoon tea It may naturally be asked how bread, which is commonly called the staff of life, can be replaced in the bodily economy In considering this question we should remember the rôle of bread in the dietary, which is to supply the carbohydrate necessity in the daily intake "Take care of the calories and the protein will take care of itself" is Professor Bayliss's adage, and it is clearly waste of time to discuss the value of bread apart from its carbohydrate content when substitutes of equal calorific value are available Oatmeal, barley meal and flour, maize meal and rice can be freely used without any apparent physiological disadvantage to replace or to eke out our supply of wheat flour The view that wheat is an essential article of diet must therefore be regarded as ill founded, a mere dietetic fetish Other more available starchy foods should promptly come into general use, and the immediate desideratum is an earnest and practical study of the best and most palatable forms in which to present these substitutes on the table If that were done by our cooks, bakers, and heads of families the idea of a physiological disaster might be put aside The extreme importance of this simple temporary step should be universally realised, since its adoption may well mean the successful avoidance of great hardship, especially to the poorer parts of the community The appeal to cut down the consumption of wheat flour should find a ready response from every patriotic individual in the land

VOLUNTARY ACCELERATION OF THE HEART-RATE

IT appears that there are a few individuals who possess the extraordinary capacity of voluntarily quickening the heart rate, 13 instances in all have been recorded, and another is reported in some detail by Dr John Favill (Chicago) and Dr Paul Dudley White (Boston) in the current issue of *Heart* (vol vi, No 3 p 175) The quickening commences almost immediately after the subject has willed it and one second after the word is given by the observer The history of how such voluntary acceleration came to be acquired is interesting There had never been any organic disease of the heart At the age of 15 a quickened pulse rate was noticed after mental excitement or physical exertion Cross country running about the age of 20 caused no cardiac symptoms even when seven miles were covered in 40 minutes At the age of 22 the effort of climbing a small mountain sent the pulse rate up to 190 Two years later the sensations which have since been found to accompany voluntary acceleration were induced for no known reasons and repeated occasionally in the following years Two years after, in 1913, the power of voluntary acceleration was discovered by chance It has been possible to exert this power ever since Such quickening is dependent on a distinct effort of will, and the strain is as tiring as that produced by holding up a heavy weight, it is not a succession of efforts but one that is continuous Relief is felt with the cessation of the acceleration During the quickening there is a feeling of fullness or tingling over the whole body A mild exhilaration occurs for a few seconds, and moderate fatigue follows if the paroxysm is induced several times The phenomena associated with the acceleration are as follows The maximum increase in rate observed has been one of 96 beats, the rate changing from 104 to 200 An electrocardiographic record shows a quickening, on another occasion, of from 98 to 161 The least increase has been 30 beats The maximum speed is reached after several beats have occurred, the high speed is maintained for a few seconds, then gradually descends to a normal rate In the paroxysm the blood pressure is slightly raised, the pupils dilate, and some sweating occurs on the palms of the hands The acceleration is suggested to be due in great part at least, to the action of the accelerator mechanism and not chiefly to the withdrawal of vagal action, since acceleration can be induced even after atropine has been given, and since the character of the electro cardiographic curves during the quickening is similar to those which occur when the sympathetic nerves are experimentally stimulated It is reported that this curious faculty has on two occasions been of service to its possessor "Once in a condition of great fatigue in a hot operating room, and again while watching cattle killed in a great packing plant for the first time, sensations of impending syncope were felt On each occasion voluntary acceleration, with its rise of blood pressure, was induced and the feeling of faintness vanished at once" These observations are of interest as a contribution to the study of variations in the cardiac rhythm, and their publication may lead to the discovery of similar cases The term "voluntary acceleration" remains in some sense a misnomer, unless conclusive evidence is present of a direct influence of the will upon the cardio accelerator mechanism In the case recorded the feeling of strain described suggests that some powerful voluntary contraction of muscles was involved to which the acceleration might have been a secondary or associated phenomenon

SOME ESSENTIAL DIFFERENCES BETWEEN ANIMAL AND VEGETABLE FATS

THE existence of accessory factors in various foods may be regarded as a well established fact, and it is now becoming recognised that there is a considerable variety among these accessory foods Experiment shows that young rats will not grow if fed on polished rice and butter, or on rice and wheat germ, while if both wheat germ and butter are added the diet becomes adequate Milk contains both of these factors There seem to be two groups of these substances one is the 'fat soluble A' factor and the other contained in wheat germ is soluble in water, not in fat, and has been called the "water soluble factor B' In a recent volume of the *American Journal of Physiology* (vol xli, 1916) E V McCollum directs attention to the distribution in plants of the "fat soluble A, the dietary essential of butter fat The question arises in view of the present consumption of margarine and other butter similars, whether any of the substitutes can actually replace butter in the diet The question has been investigated in America by several observers and in this country by Halliburton and Drummond to ascertain whether the chief butter substitutes now upon the market contain the important fat-soluble A factor Young growing rats were used, their dietary consisting of purified food stuffs, such as caseinogen, starch, dextrin, sugar, the water soluble B factor, together with the addition of the fat to be examined A rat fed on such a diet with the addition of lard was eventually found to decline and die, but if the fat soluble accessory substance A was added in sufficient amount and not too late, the life of the animal was saved and normal growth ensued. Some of the results may be summarised thus —

' Oleo-oil" margarines —In these the basal fat of low melting point oleo-oil" is prepared commercially from beef fat Osborne and Mendel in America showed that this commercial product contains the accessory factor associated with fats, and this form of margarine was found to be equal to butter fat in the nutrition of young rats For vegetable oil margarines the basis is a cheap vegetable oil, e g, coconut and peanut oil Few, if any, of the chief vegetable oils—corn, olive, sunflower seeds soy bean, wheat, linseed, arachis, coconut and cotton seed oils—contain the fat-soluble A Rats do not grow to adult size when any one of these oils is the only fat present in the dietary Margarines made from these oils are deficient in the important fat soluble factor

Vegetarian suet and lard substitutes.—*Those examined* were free from the fat soluble factor, one was a deodorised coconut oil and the other a hydrogenated cotton seed oil preparation corresponding to ' Crisco," sold extensively in the U S A as a lard substitute, but is a useless substitute for butter

The points raised are obviously of great practical importance and their solution essential to the proper understanding of some of the food problems which the war has forced upon our notice

A CASE OF POST-OPERATIVE TETANY

Dr H W Stenvers records[1] a case of tetany occurring after the operative removal of the thyroid gland, or tetania parathyreopriva, as it is sometimes called, in which relief of the symptoms was obtained both by the administration of parathyroid gland tissue by the mouth and by the transplantation of parathyroid glands The patient, a girl aged 20, had shown signs and symptoms of exophthalmic goitre four years previously, and had had the right half of the thyroid gland removed at that time Eighteen months later a second operation became necessary, and the other half of the gland was taken away While the patient was still on the operating table she had a violent and painful attack of tetany Ever since that time she had been subject to attacks of tetany, which were worst just before the menstrual periods latterly the tetany had been so severe as to prevent her from working When she came under the care of Dr Stenvers she was thrown into a state of forcible and painful tonic spasm, most marked on the right side, by any sudden mechanical, optical, or auditory stimulus The physical signs of Chvostek, Erb, and Trousseau, characteristic of tetany, were all well shown by the patient particularly on the right side Dr Stenvers draws attention to the rapidity with which tetany followed the removal of the last of the parathyroid glands in this patient As a rule many hours or days elapse before tetanic spasms occur in these cases, and a quotation from Marine is given to show that in dogs tetania parathyreopriva may develop in as little as seven hours Dr Stenvers concludes that after her first operation his patient was living in a borderland condition of latent tetany Discussing the treatment of this form of tetany, he notes that the daily exhibition of a few decigrammes of fresh parathyroid tissue from the horse gave his patient great relief This was shown in three ways firstly, the muscles became much less excitable to the interrupted galvanic current, secondly, the excretion of creatinine in the urine was lessened, thirdly, the general condition of the patient improved The importance of creatinine in tetany is this, that the tone of the voluntary muscles is much increased in conditions in which the excretion of creatinine is increased Before the parathyroid treatment Dr Stenvers's patient was excreting about 13 decigrammes of creatinine daily, but during the treatment this figure fell to about 6 decigrammes Dr Stenvers notes that horses' parathyroid glands are hard to come by during the war, his attempts to make use of the parathyroids of pigs failed, apparently because he was unable to find these organs in the animals The next step in the treatment consisted in the implantation of three parathyroid glands by Professor Laméris, taken from patients with exophthalmic goitre The results were excellent, four months later the patient was still able to work, though no longer quite free from the tetanic spasms, and the urinary creatinine had risen to nearly 9 decigrammes a day Three months later the girl was still at work and delighted with the result of the treatment, the tetany was present still, but painless

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[1] Nederl Tijdschr v Geneeskunde Amsterdam 1917 i., 85

THE INVENTOR OF ESPERANTO

Lazarus Ludwig Zamenhof, whose death is announced at Warsaw on Saturday last, was 57 years of age and a native of Bialystok in Russian Poland Of delicate health, he was intellectually precocious, reading and writing well at the age of four In 1873 Zamenhof's father having been appointed inspector of private schools at Warsaw, the boy finished his education there, going on to Moscow University to study medicine After qualifying in 1885 he returned to Warsaw, where he specialised as an ophthalmic surgeon Warsaw, with its mixed population of Russians, Poles, Germans, and Jews, early directed Zamenhof's attention to the need for a common language as an instrument of better civic and racial understanding his idea being well expressed in the verse of the Esperantist hymn "La Espero" —

Sur neŭtrala lingva fundamento
Komprenante unu la alian,
La popoloj faros in konsento
Unu grandan rondon familian

Zamenhof drew attention to a preliminary form of Esperanto in 1878, but it was not till 1887 that he published his first text book Warsaw did not greet its local prophet with enthusiasm, and it was only after obstinate opposition that his propaganda spread through to Poland, Russia, Germany, Sweden, France, and finally in 1902, to England In 1905 the first Esperanto Congress was held at Boulogne sur Mer and since then large gatherings have collected annually at Cambridge, Dresden, Barcelona, Washington, Antwerp, and Cracow, at which all the nations of the world have been represented Medicine and pharmacy are now represented by the *Tutmonda Esperantista Kuracista Asocio* and the *Internacia Esperantista Farmacista Asocio* respectively, and a medical periodical, *La Kuracisto*, only ceased to appear on the outbreak of war Zamenhof therefore lived to see a large measure of recognition given to his ideal of the drawing together of the races by means of a language which could be commonly used in addition to their native tongues

HYDROCARBONS IN FISH LIVER OIL

The discovery of a high proportion of hydrocarbon in fish liver oil is remarkable, and should set chemists and physiologists thinking as to how its presence is to be explained in place of the usual saponifiable fat or glyceride Mr A Chaston Chapman reported at a recent meeting of the Society of Public Analysts that a sample of oil from certain species of sharks caught off the coast of Morocco had been found to contain as much as 90 per cent of unsaponifiable matter, consisting almost entirely of a new unsaturated hydrocarbon to which the name of spinacene has been given and the formula $C_{30}H_{50}$ assigned Apparently there are two main classes of shark liver oils, the one having a specific gravity of about 0 86 and containing a very high percentage—up to 90 per cent—of unsaponifiable matters, and the other having a specific gravity of 0 91 to 0 93 and consisting largely of glycerides with smaller proportions of unsaponifiable matters containing cholesterol As Mr Chapman points out, the fact that these two classes of oils have totally different chemical characters and could not therefore be used for the same purposes makes it desirable to qualify the simple designation "shark liver oil" by a statement of analysis In soapmaking, of course, an oil containing so much hydrocarbon would be practically useless Should such oil find its way into cod liver oil the therapeutic intentions of the prescriber may well be set at naught, hydrocarbons, as is well known, possessing no nutritive value

The next session of the General Medical Council will commence at 2 p m on Tuesday, May 22nd, when Sir Donald MacAlister, the President, will give an address

Sir Ernest Goodhart and Mr Gordon Goodhart have given the sum of £300 to Epsom College in memory of their father, Sir James Frederic Goodhart, who was one of the earliest pupils at the College

Royal College of Surgeons of England — A quarterly meeting of the Council was held on April 12th, Sir Watson Cheyne, the President, being in the chair In accordance with the recommendation of the Jacksonian Committee the Jacksonian prize for the year 1916 was awarded to the author of the dissertation bearing the motto "Experientia docet" when the envelope bearing this motto was opened, the President announced the name of Mr Ernest W Hey Groves The subject of the dissertation was "Methods and Results of Transplantation of Bone in the Repair of Defects caused by Injury or Disease" It was resolved that the subject for the Jacksonian prize for the year 1918 should be "The Injuries and Diseases of the Pancreas and their Surgical Treatment ' Sir Arthur Thomas Sloggett K.C B , C M G , was elected a Fellow of the College under the section of the charter relating to Members of 20 years' standing Mr Charters J Symonds was appointed a representative of the College on the Senate of the University of London for a period of four years in the vacancy occasioned by the expiration of the period of office of Sir Rickman J Godlee The President reported that, together with the President of the Royal College of Physicians of London, he had received a deputation from the National Medical Union on the subject of the mobilisation of the medical profession

TUBERCULOSIS IN AUSTRALIA

THE report on tuberculosis which has just been issued by the committee appointed to consider and report on the causes of death and invalidity in the Commonwealth of Australia[1] is to be welcomed as a distinct contribution to the knowledge of the subject. The personnel of the committtee, over which Mr James Matthews, an Australian Member of Parliament, presided, adds material weight to the character of their conclusions Sir H B Allen's pathological and general knowledge is supplemented by Dr J H L Cumpston's special information, for he had previously acted as a Royal Commissioner when principal medical officer of Western Australia, and then made a most valuable report on the incidence of miner's phthisis Dr A Jeffreys Wood, the fourth member of the committee, has particular experience of children, and thus rounds off the equipment of a well chosen body

Factors concerned in the Control of the Disease

The report displays many points of especial interest in the light of the peculiarly favourable climatic conditions for chest diseases existing over the greater part of the Commonwealth and the superior conditions of living among the general mass of people The problem divides itself, there, as here into two questions To quote the report —

> The whole study of tubercle must be of a twofold character—firstly in relation to exposure to infection with the bacillus, and secondly in relation to the resistance of the individual.

The second problem which time is showing to be the more important of the two, has hardly received the consideration its importance deserves. The report states —

> The two principal factors concerned in the determination of the results of infection are (1) Personal resistance of the individual infected and (2) effect of environment on the health of the person. With regard to the comparative importance of either of these two factors very little can be said in the present state of scientific knowledge yet it is becoming increasingly evident that they are the main factors concerned in the cure and control of the disease.

The principal attention of the report is directed to the infectious side, although the evidence brought together does not suggest that the following up of that side so exclusively has yielded results commensurate with the expenditure

In England and Wales, at any rate, the fall of the death rate has not been materially altered by the knowledge that the disease was infectious, which was established in 1884 with Koch's discoveries, although in Australia there has been a more definite improvement since that discovery This especially holds in Queensland, where the top year of a rising death rate was 1884 with 196 per 100,000, as against 183 in England and Wales, whereas Queensland s death rate in 1914 had fallen to 42 while England and Wales still stood at 101 more than double

In this connexion it is interesting to contrast the position of the question in the old country, with its death rate uniformly falling during the whole of the last century, with the various Australian States which reached their top on a rising death rate for pulmonary tuberculosis in the following years —

New South Wales ..	(1885) 116 ..	(1914) 64
Victoria ..	(1887) 153 ..	72
Queensland	(1884) 196	43
South Australia	(1888) 118	64
Tasmania	(1887) 115	45

In England the rate has uniformly fallen —

In 1870 ..	241	In 1884	183	In 1904	124
1874 ..	209	1894 ..	138	1914	101

Making a comparison between the rate before 1884, we find Koch s discovery year and subsequent years —

	1875	1885	1895	1914		1875	1885	1895	1914
England	220	177	139	101	Queensland	141	192	96	43
New South Wales	105	116	81	64	South Australia	100	99	95	64
Victoria	130	145	132	72	Tasmania	—	111	75	45

These figures suggest a somewhat generally held view among medical men in Australia that infection is possibly a matter of more importance in countries with higher average temperatures, which means that education concerning and precautions against infection are more valuable in countries belonging to the warmer latitudes

Notification —Death rate in Relation to Age —Distribution

As regards notification, the question does not seem to be in a much more satisfactory condition in Australia than in this country, as the notification proportions to death rate show that the average case is not notified till the later stage of the disease In this connexion a great improvement will occur when the death rate figures are published in definite periods, after notification has occurred, say, one month, six months, 12 months, 18 months, and so on, then a reasonable comparison of results can be instituted between the various States It will probably be found that by far the greater number of deaths occur within six months of notification, suggesting that the present practice is to notify long after the infectious state has been reached, which in itself would more than nullify the procedure

In relation to the age at which tubercle is most dangerous, a most interesting set of figures is given which demonstrates that the death rate from tubercle does not in males differ very much in accordance with age, rising slowly from 111 per 100,000 between 25 and 29 till it reaches its maximum in males between 55 and 59, or 185 per 100,000, then slowly falling to 137 between 70 and 74 In women the incidence is quite different The corresponding figures rapidly rise from 113 per 100,000 between the ages of 20 to 24, to a maximum of 135 per 100,000 between 25 and 29, and as rapidly fall to 121 between 30 and 34, gradually diminish to 91 per 100,000 between 60 and 69

The rate is never so high for women as men after the thirtieth year The high figures for women in early life are probably due to child bearing and the sexual periods which have such an injurious relation to tuberculous women, and in this connexion it must be remembered that the healthy woman marrying the tuberculous man finds far greater danger of infection than if the risk were the other way about

The distribution of tuberculosis in Australia is a matter that must attract considerable attention The figures are for the year 1911 and for men only (the total number of deaths analysed being a little over 2000), but they yield first of all the statement that tubercle is most fatal among those of independent means, being at the rate of 222 per 100 000, independence being apparently even more fatal than mining and quarrying with its 200 per 100,000, industrial 153, professional and commercial 120, winding up with pastoral and other primary industries at 25 per 100,000 This suggests some reflections, and accords with the view held by many that resistance to tubercle is less among the well-to-do classes, and manifestly it can in their cases be neither housing nor want, but the disease catching them at their best, with no reserve, and with little grit, so to speak, putting the balance on the side of the bacillus This return is very interesting from a treatment point of view, and suggests that the rich suffer from insufficient stamina and that an increase of hardening should be aimed at for their successful treatment The pastoral industry, on the other hand, probably working longer hours at a slower pace than any other, gives the best results

Preventive Measures

Years ago the prevalence of tubercle in the colony was supposed to be due to importation of cases attracted by the suitable climate, but statistics put an end to that fallacy, as it is found that 72 per cent of the deaths occur amongst those born in the colony and 13 5 with over 20 years residence, while only 6 2 occurred within five years of arriving In a democratic community like Australia it is interesting to see that the treating of tuberculosis as a penal offence is suggested That is all the more striking, as the view which regards infection as being the main cause of the death rate has had little fresh evidence brought forward in its favour Although gross infection undoubtedly does act injuriously, only in about 30 per cent of the cases is any contact proved, which is an insufficient number to justify the drastic powers suggested It must be remembered that Sir H Allen's experience in the post mortem room of the Melbourne Hospital confirmed the now generally admitted fact of the almost universal tuberculous infection in later life, as first practically demonstrated by Naegeli and von Pirquet If this is so, the line of success must lie in seeking to increase the resistance rather than in the diminution of infection It must be remembered that smaller incidence in women especially at the later period when men are most subject, almost proves this contention The men and women graph at the end of the report is a most eloquent statement The lowest women's death age is from 50 to 55, and the highest death age for a man is 55 to 59, women then being under 80 per 100,000 and men over 180 per 100,000 an impossible position if infection were the main cause of death rate

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[1] F 11 A J Mullett Government Printer State of Victoria.

It should, we think, be remembered that penal clauses militate against their own success as tending to prevent the notification of earlier cases The State should in its own interest, be prepared to provide beds for all later cases desiring them There should be no such position as "hospital beds full, no room for more" Likewise every effort should be made to remove notably infectious cases, on ordinary sanitary grounds, from lodging houses and places of public resort. But interference with the home must be very carefully safeguarded except by the legitimate means of education and persuasion, save in those cases where poverty and dirt render some alteration necessary in the interests of the individuals themselves as well as the community

Far more important in our view is the question of proper sustenance for the dependents of the tuberculous, a point at present more responsible for the extension of the disease than any other cause by diminishing the resistance, from insufficient food, to those already probably considerably infected. Here comes in the question of the extreme value of the invalidity pension of the Commonwealth, which might well be copied in this country It appears fair that the community should see that those to whom it supplies pensions should take proper precautions and the pensions investigation suggested in the report has all in its favour By investigating the condition of the pensioners many important problems could be settled to the material welfare of the community How important these pensioners are to the Commonwealth finances is indicated by the payment made under the Act of £44,000 in the last five years We are glad to see that the report suggests that the pensions should not be interfered with on the patients entering hospital

Administrative measures, the report says, should be adapted to the knowledge and experience already available The latter are, as we have seen, by no means the same in Australia as in this country, but there, as here, the keynote of success probably lies in the dispensary system, which keeps in touch with the tuberculous in their own homes "Considerable extension," the report's recommendation runs, "of the dispensary system is required with the object especially of detecting the early cases before they reach the stage when they are infectious for others A necessary corollary to this is the provision of sufficient sanatorium and hospital accommodation to afford a bed for every early case" The object of this provision being contained in the statement, which we can cordially endorse "They go to the sanatoria for cure and for education, and cure rests mainly upon education"

Another useful suggestion in the report is to the effect that the school medical inspectors be supplied with a definite standard of nutrition in school children for them to work upon Undoubtedly the undersized and undeveloped are the most susceptible to tuberculous diseases in youth We think it probable, however, that a different standard would be required for each colony and possibly for different degrees of latitude in each colony The suggested observation of nutritional percentages[2] at regular periods by the teachers would probably bring early tubercle more under observation than any other single simple measure The effect of different latitudes on the development of a similar race in regard to tuberculosis would, in addition, yield material of enormous importance to the problem of the white development in Australia, a matter more nearly touching national life in the Commonwealth than in any other part of the British dominions

In conclusion, a word of commendation must be given for the excellent graphs which accompany the report the high character and able presentment of which reflect the careful selection of the Commissioners

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[2] THE LANCET 1916 i, 85

THE LATE CHARLES MOON, M D EDIN —Dr Charles Moon, whose death has just occurred at his residence, Dundee, was born in 1843, and educated at St Andrews and Edinburgh Universities After qualifying, he started practice in Dundee, where he built up a large practice over a period of half a century He is survived by a widow, five sons, and two daughters

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THE CONTROL OF VENEREAL DISEASES

The Bootle Scheme

THE scheme for the diagnosis and treatment of venereal diseases adopted by the Bootle town council has been approved by the Local Government Board and is now, we learn from Dr W Allen Daley, medical officer of health, in operation The salient features of this scheme are as follows —

1 Cases of venereal disease in their earlier and all communicable stages will be dealt with at the treatment centre (borough hospital), irrespective of their place of residence or their means 2 Mr W N Clemmey M R C S, honorary surgeon and radiologist to the hospital, has been appointed medical officer to the clinic, to be held at noon on two days a week, with facilities for attendance in the evening of persons unable to attend during working hours 3 Provision has been made at the hospital for microscopical examination of specimens from gonorrhœal cases Examination for spirochætes and Wassermann reactions will be undertaken by Professor L M Beattie at the University of Liverpool 4 Private practitioners may send patients to the hospital for blood to be taken for Wassermann reactions or for smears for the examination of spirochætes to be prepared 5 A report is posted to any private practitioner who sends a case for consultation 6 The Borough Hospital Committee receives £100 per annum for the services of its medical officer, and £25 for therapeutic agents for a period of six months Approved substitutes for salvarsan to be supplied by the Corporation The Hospital Committee reserves two beds to be used exclusively for persons suffering from venereal diseases the council paying £200 per annum, and an additional sum of 5s per night is paid for each person admitted for intravenous injection when the two reserved beds are already occupied 7 On personal request from private practitioners, reports on the previous treatment of patients will be furnished, but such reports will be given only with the consent of the patients 8 The scheme does not include the treatment of patients in places other than the hospital If the medical officer is called upon to attend patients in their homes a special fee will be charged

The cost of these arrangements for the first 12 months is estimated at £400, including the provision of a third bed in the hospital on 200 nights The medical officer of health is a member of the Liverpool Branch of the National Society for Combating Venereal Diseases and under its auspices lectures are being given for public instruction and enlightenment

Antimonial Treatment of Phagedæna and Syphilis

A paper by Dr D José Brotons, in the *Revista de Medicina*, on the treatment of phagedæna and syphilis by the intravenous injection of antimonial compounds (Los compuestos antimoniales por via endovenosa en el tratamiento del fagedenismo chancroso y en la sifilis) is of considerable interest The author gives clinical histories of five cases treated by this method three of soft chancres with phagedæna, one of ulcerating gummata, and one of hard chancre with very severe secondary symptoms and rapidly deepening cachexia In all these cases rapid improvement leading to cure of the condition was brought about by intravenous injections of doses of tartar emetic varying from 3 to 10 centigrammes and this after other methods of treatment had failed to arrest the morbid process Dr Brotons claims for antimony specific "anti spirillary" properties, and dissents from McDonagh's view that it acts merely by heightening the effect of iodine

Post Graduate Summer Courses in London.

Three hundred panel practitioners have already attended the courses of instruction given by Lieutenant-Colonel L W Harrison at the Military Hospital, Rochester row, London, S W 1, and arrangements are being made for holding further courses of instruction at the hospital during the forthcoming summer Many practitioners were compelled to forgo attendance at the winter courses through pressure of work The summer courses will be extended over a period of six weeks in order to give more opportunities for practical work Lieutenant-Colonel Harrison is prepared to give those practitioners who have already attended at the hospital a larger opportunity of attending practical demonstrations Applications should be made to the secretary of the London Panel Committee, 51, Chancery lane, W C 2

PARIS

(FROM OUR OWN CORRESPONDENT)

The Results of Operation in Purulent Arthritis

M Auvray has recently summarised at the Society of Surgery the operations performed by him during the war in 111 cases of suppurative arthritis of the large joints In every case definite purulent arthritis was shown to be present, sometimes unrecognised for several weeks after the infliction of the wound Only the immediate results of operation were available in regard to life and the preservation of the limb, the majority of patients having been lost sight of after healing of the wound The joints affected were the knee (34) the elbow (32), the shoulder (20), the ankle (12), the wrist (7), the hip (4) and the sacro iliac articulation (2) Eight patients died, a total mortality of 7 per cent Of the cases of purulent arthritis of the wrist, 7 were resected and all recovered Of the elbow 5 underwent arthrotomy only and all recovered, 9 in addition underwent secondary resection, and all of these also recovered, among the 18 cases in whom a more or less typical resection of the joint was of necessity performed at the onset one death occurred Of 20 cases of suppurative arthritis of the shoulder 2 were treated at the onset by resection and recovered, 18 of whom 1 died, underwent secondary resection For purulent arthritis of the ankle 12 operations were performed, of which 2 were amputations, all recovered with the exception of one of the amputation cases Of the 34 cases of suppurative arthritis of the knee 21 were submitted to arthrotomy resulting in 20 recoveries and 1 death, 4 were treated by resection, of whom 1 died and another, owing to symptoms of infection, was obliged to undergo amputation, in 9 other cases recourse to amputation proved necessary Out of a total, therefore, of 10 amputations there were 7 recoveries and 3 deaths Finally, in cases of suppurative arthritis of the hip, 4 resections gave 4 recoveries

Diphtheria in the Army

In a study dealing with the work of a diphtheria service Dr Louis Rue calls attention to the necessity of employing large doses of serum, especially under certain conditions This, although a cardinal point in treatment, is insufficiently recognised by some practitioners Under pre war conditions an average dose of 120 to 150 c c of serum in each case had reduced the total mortality to 3 45 per cent, and only a very small number of cases of diphtheritic paralysis were seen Dr Orticoni, who is an advocate of large doses of serum, found on his arrival at an infectious hospital base 20-25 and even 29 per cent mortality from certain sections of the front where doses of 50-60 c c daily were employed, while numerous cases of generalised paralysis resulted during convalescence Orticoni systematically introduced the method of large and repeated doses In cases of average severity he injected some 300 to 500 c c. in the course of the disease, in severe cases 700 to 1000 and even 1600 c c commencing with doses of 100 to 120 c c daily in two injections During a period of seven months he treated thus 208 cases of diphtheria, with only a single death Albuminuria became infrequent and only two or three patients passed at any time as much as 0 1-0 3 per cent of albumin Albuminuria is no contra indication to serum treatment, on the contrary if applied in the course of a case of moderately acute diphtheritic albuminuria the albumin rapidly disappears The only troublesome complications due to the serum were articular Urticaria was frequent affecting the abdominal walls or more generalised and attended with itching Paralysis was rare The serum should be continued two or three days after the false membrane has disappeared Larger doses were employed when the false membrane was greyish in colour or diffluent or when the surrounding mucosa was much affected Bleeding from the mouth or nose or blood staining of the mucosa around the false membrane suggest the advisability of large doses especially as the serum is not a negligible factor in increasing the coagulability of the blood The fear of anaphylaxis was found to be quite illusory as it could be avoided by a preventive administration of a dose of 1 to 4 grammes a day of calcium chloride and of injection of 1/4 of a milligramme of adrenalin M Rue indicates a symptom which might be disturbing to a doctor who had not been warned In certain cases a localised arthralgia occurs in the temporo-maxillary articulations, occasionally affecting the cervical and dorsal spine The resulting trismus and rigidity of the spine then suggest tetanus The fact of a previous injection of serum and the frequent co-existence of urticaria lead to a correct diagnosis

" Jigsaw " Autoplasty

M Morestin recently made a communication to the Academy of Medicine on a form of autoplasty which does not require any addition of foreign tissue At most it is necessary to take smallish strips from the immediate neighbourhood of the injury, for whereas deformity is often considerable the actual loss of substance may be very slight or even nil The tissue debris, scattered in irregular rents, shrivelled, or rolled up, are still generally living To turn these fragments to good account it is necessary to begin with the methodical removal of cicatrices scrupulously respecting all that remains of the healthy soft tissues Strips of mucosa are isolated without paying much attention at first to their method of disposal Dissection must be patient and complete, and the greatest possible mobility of the wound secured by dividing all adhesions At this stage the question arises of bringing together and reuniting the fragments Little by little the best arrangement is found the operator being guided all the time by the facts he ascertains In this form of reparative surgery no two cases are identical Sometimes the results obtained may be improved by touching up later but in many cases they are perfect from the first Jigsaw autoplasty has extensive indications in all injuries of the face, especially in mutilations of the lips and the cheeks General anæsthesia is hardly ever necessary

April 16th

URBAN VITAL STATISTICS

(Week ended April 7th 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 17 3, against 16·9 and 18·0 per 1000 in the two preceding weeks In London, with a population exceeding 4 000 000 persons the death rate was 16 9 or 1 2 per 1000 below that recorded in the previous week among the remaining towns the rates ranged from 7·0 in Cambridge 7·7 in Oxford and 7 8 in Hornsey to 28 0 in Middlesbrough 28 5 in Great Yarmouth and 29·8 in Warrington The principal epidemic diseases caused 438 deaths which corresponded to an annual rate of 1 3 per 1000 and included 279 from measles 56 each from whooping-cough and infantile diarrhœa, 36 from diphtheria 8 from scarlet fever and 3 from enteric fever The deaths from measles showed a further increase compared with the numbers recorded in the 10 preceding weeks and caused the highest annual rates of 3 4 in Bolton 3 6 in Middlesbrough and in Sunderland and 6 3 in Dudley The 755 cases of scarlet fever and the 1297 cases of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 40 and 80 below the numbers remaining at the end of the previous week Of the 5627 deaths from all causes in the 96 towns 191 resulted from violence The causes of 64 of the total deaths were uncertified of which 16 were registered in Birmingham 5 in Liverpool and 4 in Gateshead but only 1 in London

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2 500 000 persons the death rate was equal to 16 9 against 16 2 and 17·9 per 1000 in the two preceding weeks The 386 deaths in Glasgow corresponded to an annual rate of 18·0 per 1000 and included 34 from whooping-cough 23 from measles 6 from infantile diarrhœa, 3 from diphtheria, and 1 from scarlet fever The 121 deaths in Edinburgh were equal to a rate of 19·0 per 1000 and included 10 from measles 8 from whooping-cough and 1 each from diphtheria and infantile diarrhœa.

Irish Towns —The 193 deaths registered in Dublin were equal to an annual rate of 25·9 or 3 4 per 1000 above that recorded in the previous week and included 20 from measles, 3 each from whooping cough and infantile diarrhœa, and 1 from diphtheria. The 190 deaths in Belfast corresponded to a rate of 25·2 per 1000 and included 8 from measles 5 from infantile diarrhœa, 2 from enteric fever and 1 from whooping-cough

BLINDED SAILORS AND SOLDIERS IN EDINBURGH —On April 12th Mr Barnes the Minister of Labour, visited the Scottish Blinded Soldiers and Sailors Hostel at Newington House, Edinburgh The history and work of the hostel were explained to him by Dr Burns and Mr Sommerville Grieve Mr W M Stone the superintendent, urging the disadvantage of centralising in London the training of blinded service men After inspecting the hostel and workshops Mr Barnes said that the work at Newington House ought to have a part in any general scheme of organisation for blinded service men

Correspondence.

"Audi alteram partem '

RADIATION IN MALIGNANT DISEASE

To the Editor of THE LANCET

SIR —I have read with much interest the paper on this subject by Captain A A Russell Green and *the leading* article in your issue of April 7th While in no sense wishing to decry the effect of radiation I cannot help thinking that you and your correspondent have formed a far too sanguine opinion on insufficient data I select for comment the treatment of rodent ulcer, a subject to which I have devoted long study, and which, in fact, forms the chief basis of *your correspondent's paper, for he tells us that only* two out of the 53 cases of ' neoplasmata," on which he reports, were not rodent Your correspondent bases his statistics, as far as I can follow them, on the mere healing of the rodent lesion, which I submit with confidence is a fallacious test Thus in Table IV we are told that 66 per cent of the traced cases were " healed " but the detailed analysis in which the duration of the observation is mentioned, in 24 cases which remained healed, more than half of these (13 to be exact) had been under scrutiny for less than two years Moreover, analysing the 25 cases of rodent ulcer in Table I , the most important from the author's standpoint, for these constitute the " traced healed cases," we find that only seven of the 25 cases had a longer duration than five years, a reasonable *conclusion from which data is that these were* comparatively early and small lesions, peculiarly amenable to treatment of any kind And this conclusion receives some confirmation from a consideration of Table II , "traced unhealed cases " for of 14 such, seven were of longer duration than five years, and in three of the remaining seven the duration is not specified The author therefore in his successful cases is probably dealing with small rodents as a rule

Now if we make mere healing of the lesion the criterion of success it is obvious that no treatment can compare with excision, for here 'healing" *is practically immediate and* complete But tested by the sole criterion which is of real importance, the ratio of recurrence, the argument for excision is greatly weakened for an examination of published statistics of the results of operation makes on the whole melancholy reading Two years ago in a paper on Rodent Ulcer contributed by me to the *British Journal of Dermatology*, reference was made to a table published by Butlin, in which of a large series of operated cases kept under observation for three years, recurrence took place in 63 per cent And I believe that that period of observation, although it compares very favourably with your correspondent's data, is far too short to allow of a considered judgment as to ultimate values of competing treatments

My personal opinion, expressed in the paper to which I have referred is that a method of far wider application (for it is at the disposal of every practitioner, which is certainly not the case with *radium) is the* method *of freezing* with carbon dioxide snow, a peculiarly valuable method in the small early rodent, and if practised at its first stages would I am confident materially lessen the *toll* of "unhealed" and inoperable cases —I am, Sir, yours faithfully,

Wimpole-street, W , April 17th, 1917 E GRAHAM LITTLE

To the Editor of THE LANCET

SIR,—In a leading article in THE LANCET of April 7th you advocate post-operative radiation in cancer You say ' However favourable a case may appear, no surgeon can be sure that he has removed every trace of malignancy , or, indeed, that he himself has not scattered malignant cells *over the field of operation* " (italics mine) If this was the worst that could happen *immediate post-operative* radiation might suffice to deal with it But who shall say to what part of the body these cells may not be carried in the blood stream ? I have for years been advocating *pre* operative, as well as *post* operative, radiation and perhaps you will allow me to quote from a contribution which I made to a discussion on ' Radiation in Cancer," which was opened by Sir Alfred Pearce Gould at the annual meeting of the British Medical Association at Brighton in July, 1913 Having pointed out that with modern X ray technique a depressant effect can be produced upon cancer cells long before there is any injury to the skin, I said —

> We know that whenever and wherever the knife is employed there is always a risk of disseminating malignant cells, which subsequently take root and flourish It is not to be supposed however that this colonisation is allowed to take place without opposition on the part of the invaded tissues Many of the would be settlers are no doubt slain before they are able to propagate their kind Some, nevertheless, usually escape, but if these *specially vigorous cells* were subjected to previous radio-therapeutic attack their chances of post-operative survival would be materially *lessened. A cancerous tumour* in an early stage presents an opportunity for X ray therapy which is never *repeated The enemy is concentrated in close order* and can be assaulted in force Every cancer cell which escapes removal will then be in a devitalised condition and in the presence of tissues whose resisting power has been artificially heightened

It has long been known that cancer grafts exposed to X rays will rarely " take " The present writer has in his *possession* pathological reports of cases of breast cancer which had been rayed for 3-4 weeks previous to operation. These reports stated that most of the cancer cells showed degenerative changes Moreover, American workers have recently proved that *raying of the wound surface into which a graft is to be put* reduces by one half the percentage of successful plantings [1] This furnishes experimental proof of another principle for which the present writer has contended—viz , that the effect of X rays in stimulating the healthy tissues to resistance is quite as important as any directly depressant action upon the cancer cells *Disregard of this principle leads to dire results*, as is sometimes seen in the extensive sloughing of normal tissues around a buried tube of radium

You rightly deprecate any attempt to pit X rays against radium or *vice-versa* May I point out, however, that any comparisons between X ray and radium effects are valueless unless exact details as to filtration, quality of ray, milliamperage in tube, distance from skin, time, number and spacing of exposures are all given For example, a " reaction " produced by soft unfiltered X rays has a significance quite other than a similar response produced by a very penetrating, heavily filtered Röntgen radiation In the one case the reaction is rapidly provoked and involves surface cells only , any malignant tissue lying even a few millimetres below the surface is unaffected In the other, response is more tardy, but the disturbance reaches to a depth of some centimetres The bearing of these facts upon liability *to recurrence is self evident*

I am, Sir, yours faithfully,
FRANCIS HERNAMAN JOHNSON

Cavendish square W April 8th 1917

⁂ Mr Hernaman Johnson states well known views —ED L.

THE TECHNIQUE OF LUMBAR PUNCTURE

To the Editor of THE LANCET

SIR,—I have noticed twice lately, while performing lumbar puncture for cerebro spinal fever, a phenomenon which might, if unrecognised, cause an error in diagnosis —

1 In the first case the needle (Barker's) was inserted into *the theca, and on withdrawing* the trocar cerebro-spinal fluid came out at the normal rate—i e , a drop every two or three seconds The needle was then pushed in a little further and the fluid came out in a jet under considerable pressure This occurred again in the same patient during a subsequent puncture

2 In this case the fluid came out at the normal rate, but inserting the needle farther did not increase the rate of flow As there were good grounds for suspecting cerebro-spinal fever, it was pushed on until felt to impinge on the body *of the vertebra, with still no* alteration in the rate of flow, even though the trocar had been reinserted It was then withdrawn a little and the fluid came off in a jet under pressure

In both cases puncture was performed under a general anæsthetic (C E)

If no *fluid* were *obtained* at all one would, of course, know the needle was blocked or that the theca had been missed, but when, on withdrawal of the trocar the fluid is found *to* flow at a normal rate, a *mistake* in diagnosis might easily occur, especially as in early cases the fluid is often not even opalescent and contains few or no organisms.

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[1] See The Cancer Problem and the W ld War Pract March 1917 p 230

As I have seen no mention of this in the literature, but have had two cases showing it within the last month, I thought that—though a small point—it might be worth mentioning to you —I am, Sir, yours faithfully,

F A WILLIAMSON,
April 8th, 1917 Temporary Surgeon, R.N

*** The difficulty is a real one, and deserves more consideration than it has yet received."—ED L

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be temporary Surgeons W T Beswick E D Brosker J A. Hadfield and R McM Bowman

ARMY MEDICAL SERVICE

Col J H Daly is retained on the Active List under the provisions of Articles 120 and 522 Royal Warrant for Pay and Promotion, 1914 and to be supernumerary

ROYAL ARMY MEDICAL CORPS

To be temporary Majors: Temp Capt B H Slater A. G Phear and R. O Moon

H B Crothers to be temporary Honorary Major whilst employed with No 22 General Hospital

The relinquishment of his temporary commission as Captain by Temp Capt R A Rankin Canadian A M.C is cancelled

Temporary Lieutenants to be temporary Captains H H Hannigan J F Gill F J Strachan F B Young A M Masters C E Molino R B Eadie J W Potter R H Bridge G C Berg E L. Hopkins, L. M Mayers G W Young T P Buist, C E G Bateman A E Foerster W G Weston G B Mason W H. Thomas J Hewat E A. Morgan C W Walker R H L. O Callaghan H. S Gaskell G F Forde W J McIvor R J P Waugh B P Allinson T W Mason G J Knaggs R W Chapman A Walker W J Evans J N Deacon F A O Donnell A. Pimm P Figdor W A. Curry, D S Taylor W J Tulloch C Cairnie W K. Bell D L MacKenna, G F Nelson C V Kebbell D Rees J A. O Dea E E Chipp G C W Williams C A. R Nitch P J S O Grady C Weller

C R Stewart to be temporary Hon Captain, without pay or allowances and S E T Shann to be Hon Captain while employed with No 5 British Red Cross Hospital

To be temporary Lieutenants: L J Hood H S Thomas, G F Fismer C T Galbraith E H R. Altounyan A. C Meek H. A Lane W H Johnston A N Collier G H F Graves, G M Simpson C H Booth J T Brown R. J Duthie A W Gill, J H Hall J A. Bateman C O Botman A. Shelley J McCartney M. B Taylor D L Davies, F D Simpson L du Verge L D H Baugh P C Bushnell, C F Hardie H B Pare H G White L A. H Bulkeley J Gaff E D Keane H S A. Hogg G R Dobrashian, Lieut. R G Hill, from 2nd East Anglian Brigade R F A T F J A. A. Boddy F C H Bennett S B Couper R W Pearson J E English A C Hallowes A H Clough H G Steel, J P McVey W B Jack R. J Helsby

To be temporary Honorary Lieutenants without pay or allowances: E K Clarke F F Tisdall

Officers relinquishing their commissions: Temp Capt J A. Mescall (on account of ill health) Temp Capt R M Clarke Temp Capts. F W H Hutchinson J P Walker A. H. Conder A. Wiley F H Rudge N G Horner R Fielding-Ould C S Pantin A. C Freeth S J Henry J W Wood G M de Vine W C McN Dickey (on account of ill health) F D Atkins (on account of ill health) Temp Hon Capt J F Mackay and Temp Hon Lieut. Richard S Topham (having resigned their appointments under the British Red Cross Hospital Netley) Temp Lieuts H W Paddell J Dunlop C L Forde J K Bell S A. McClintock R B Gorst J L Power R V Murphy C Costello

SPECIAL RESERVE OF OFFICERS

Capt P S Vickerman to be temporary Lieutenant-Colonel while holding a special appointment

Lieutenants to be Captains J M Courtney G R Barry M McGillivray T D Renwick

Capt. J H Bayley to be Acting Lieutenant Colonel which commanding a Field Ambulance

Lieutenant on probation G R Waller relinquishes his commission

TERRITORIAL FORCE

Capt (acting Lieut Col) T H Chittenden reverts to the acting rank of Major on alteration in posting

Capt (temp Major) W D Sturrock to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

Capt E G Annis to be acting Major whilst in command of a Field Ambulance

Capt. O L. Appleton to be acting Lieutenant Colonel whilst commanding a Field Ambulance

Capt G C L Simpson to be acting Lieutenant-Colonel whilst commanding a Casualty Clearing Station

Lieut J Steele to be Captain and to remain seconded

Lieut J S Ranson to be Captain

Major (temp Lieut Col) L. I Demetriadi relinquishes his temporary rank on ceasing to command a Casualty Clearing Station

Capt G J M Martin relinquishes his commission on account of ill health

DEATHS IN THE SERVICES

Surg Gen Sir William Taylor K.C B late Director General of the Army Medical Service on April 10th aged 74 at Windsor He joined the Army Medical Staff in 1864 and served in Canada and in India, where through the Burma campaign he was on the Staff of the Commander in Chief (mentioned in despatches) During the Chino-Japanese War he acted as Military Medical Attaché to the Japanese Army In the Ashanti Expedition 1895-6 he was principal medical officer (promoted to the rank of surgeon general) He was also principal medical officer of the expedition to Khartum in 1898, and was present at the Battle of Omdurman From 1898 to 1901 he was principal medical officer in India, and afterwards Director General of the Army Medical Service which post he held from 1901 to 1904 He was created C B in 1898 and K C B in 1902 He was a Knight of Grace of the Order of St John of Jerusalem in England and an honorary LL.D of Glasgow University

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt G B Bailey, Australian A.M C

Previously reported Missing now reported Killed

Capt S J Linzell, M C , R A.M C , qualified at Edinburgh in 1912, and held the appointment of house physician at the Royal Infirmary in that city, and was also an ex President of the Royal Medical Society of Edinburgh He obtained his captaincy in the R A.M C in March, 1915 and was on the staff as a Deputy Assistant Director of Medical Services The award of the Military Cross is announced in our "Honours List"

Died

Capt H A Lunn, R A M C , qualified at Glasgow in 1902, and practised in India before the war He joined the R.A.M C in 1914 and served in Gallipoli and elsewhere He returned to India at the close of last year, and died in hospital there of fracture of the skull brought about by an accidental fall

Capt J McC Orme, R A M C , qualified at Edinburgh in 1915, and thereupon joined up

Missing, believed Drowned (in the Hospital Ship "Salta" mined in the Channel)

Capt J R Gyllencreutz, R A M C , was a student at St Thomas's Hospital, London, and qualified in 1908 He held appointments at Wandsworth Infirmary, at Brentford Infirmary, and at the Royal Hospital, Portsmouth, and was in practice at Richmond, Surrey, prior to joining the R A M C

Capt G C B Hawes, R A M C , was a student at St George's Hospital, London, and qualified in 1893 He held house appointments at St George's, and was in practice at Pangbourne Berks (for which county he was a J P), before joining the R A M C

Capt T G S Hodson, R A.M C was educated at Newcastle on Tyne and at the London Hospital, and qualified in 1893 He was in practice in Wimpole street, London, at the time he joined the R A M C

Lieut J Naylor, R.A.M C , was a student at St Bartholomew's Hospital, London, and qualified in 1889 He held a surgical appointment at the Derbyshire General Infirmary, and was in practice at Tipton Green, Staffs, prior to joining the R A.M C in October last

Capt H G Smith, R.A M C , was a student at St Bartholomew's Hospital, London, and qualified in 1909 He held appointments at the Westminster Hospital and at the London Temperance Hospital, and for a time was resident surgeon at the Lord Derby War Hospital He was assistant medical officer of health and assistant school medical officer to the borough of Croydon, where he joined the R.A.M C in July last year

Wounded

Capt W L Cassells, R A M C

Capt W M Penny, R A M C , attached Yorkshire Light Infantry

Capt W N Gilmour, M C , R A M C , attached Royal Scots

Capt J R Kemp, M C , R A M C , attached Essex Regt

THE HONOURS LIST

The following awards to medical officers are announced —

Distinguished Service Order

Temp Lieut John Maximilian Hammond, R A M C , attached Devonshire Regiment

For conspicuous gallantry and devotion to duty in evacuating a large number of wounded under the most difficult conditions He was himself subsequently wounded and though both his feet were practically blown off he ordered his stretcher-bearers to carry away another wounded man first

Bar to the Military Cross

Temp Capt Ernest Emrys Isaac, M C , R A.M C , attached Royal Fusiliers

For conspicuous gallantry and devotion to duty He worked continuously under very heavy fire and was responsible for the successful evacuation of the wounded He set a splendid example of courage and determination throughout the operations

(The award of the Military Cross was announced in THE LANCET of Oct 28th 1916 p 770)

Temp Capt Patrick Joseph Lane, M C , R A.M C

For conspicuous gallantry and devotion to duty On several occasions he led out squads of stretcher bearers under very heavy fire and succeeded in bringing in many wounded men He set a splendid example of courage and determination throughout

(The award of the Military Cross was announced in THE LANCET of Dec 2nd 1916 p 958)

Capt Rudolph Albert Peters, M C , R A M C , attached King's Royal Rifle Corps

For conspicuous gallantry and devotion to duty He continually tended the wounded under very heavy fire He set a splendid example and showed an absolute disregard for his own personal safety He has on many previous occasions done fine work

(The award of the Military Cross was announced in THE LANCET of Oct 28th 1916 p 770)

Temp Capt John Caruthers Sale, M C , R A M C , attached Royal Fusiliers

For conspicuous gallantry and devotion to duty He displayed great courage in collecting and dressing the wounded in the face of a very heavy hostile barrage He set a splendid example to all ranks

(The award of the Military Cross was announced in THE LANCET of Dec 2nd, 1916 p 959)

Military Cross

Temp Capt Victor Thomas William Eagles, R A M C

For conspicuous gallantry and devotion to duty He organised and led search parties for wounded and worked continuously under very heavy fire for over 24 hours He set a splendid example of courage and determination throughout

Capt Norman Parsons Jewell, East African Medical Service

For conspicuous gallantry and devotion to duty He worked continuously for 62 hours and single-handed attended to over 100 wounded men He has on many previous occasions done fine work

Temp Lieut Charles Gordon Kemp, R A M C , attached Northern Regiment

For conspicuous gallantry and devotion to duty He worked unceasingly for two days under very heavy fire, and succeeded in evacuating a large number of wounded He displayed great courage and determination throughout the operations

Capt Stanley James Linzell, R A M C

For conspicuous gallantry and devotion to duty in superintending the evacuation of the wounded He continually visited the forward Battalion Headquarters passing under very heavy fire He set a splendid example of courage and determination throughout. (The death of this gallant officer is chronicled above)

Temp Capt Thomas McCosh, R A M C , attached Welsh Regiment

For conspicuous gallantry when his aid post was subjected to heavy shell fire for over three hours He, with absolute disregard for his own personal safety set a splendid example of courage and devotion to duty

Temp Surg William James McCracken, R N

For conspicuous gallantry and devotion to duty He continually attended to the wounded under very heavy fire He has previously done fine work

Temp Capt Herbert Walker, R A.M C

For conspicuous gallantry and devotion to duty He led his stretcher-bearers with great courage and determination for a period of 36 hours It was due to his energy and resource that a large number of wounded were evacuated under the most trying conditions

Capt Gladston Montague Hunt, Australian A M C

For conspicuous gallantry and devotion to duty He showed an absolute disregard of danger and set a splendid example to his stretcher bearers working with them over ground continually swept by heavy fire He worked for six consecutive weeks in a forward area in charge of an advanced dressing station

Capt Harrie Bertie Lee, Australian A M C

For conspicuous gallantry and devotion to duty in evacuating the wounded He set a splendid example throughout and worked continually under very heavy fire He has previously done fine work

DEATHS AMONG THE SONS OF MEDICAL MEN

The following sons of medical men must be added to our lists of those who have fallen during the war —

Capt V O Todd, Royal Lancaster Regiment, second son of Colonel O Todd, A M S

Brevet-Major H E Trevor, Northamptonshire Regiment temporary Lieutenant-Colonel Essex Regiment, son of Surg Gen Sir F Trevor, K C S I , C B , of Steeple Aston

Second Lieut A P Webb King's Shropshire Light Infantry, second son of Dr H P Webb

Second Lieut G S Spence, South Wales Borderers, younger son of the late Dr W J Spence, of Bedford

Second Lieut D N O'H Humphry Davy, Hampshire Regiment, younger son of Dr A Humphry Davy, of Bournemouth

MEDICAL MOBILISATION IN AMERICA

The important part which medicine has taken in the war has been generally acknowledged and appreciated When war was declared few people realised that it would develop on such a huge scale, or that the mobilisation of so large a proportion of the medical profession in the British Isles would be needed to supply the demands of the Army, yet in spite of these, the organisation of the medical profession has produced results which, when the true medical history of the war comes to be written, will redound to its credit. Coming into the war late America will have before her the vast medical experience of our own and other countries as well as her own gained in the prosecution of her beneficent Red Cross and other medical work on behalf of all the belligerents , but that she will also have to attend to her own domestic problems and that she has resolved firmly to do so is shown in a stirring leading article which appeared before the actual declaration of war with Germany In the February issue of *American Medicine* the writer says "Lethargy, indifference, inaction have given way to enthusiasm, application, and devoted service A nation of many component national factors has suddenly been welded into a homogeneous mass " In words which might equally apply to *our own country, America's failure to realise her responsibilities* as a Christian nation is pithily summed up thus "In the midst of prosperity and material success, the nation has grown careless, indolent, and wasteful National adolescence has been characterised by bombast, temerity, and extravagance " While recognising the need for the careful guidance of public opinion without jingoistic utterances and for patriotic inspiration free from cries for blood, it is pointed out that "If there must be war, let it be approached with grimness and determination as an unpleasant duty to be performed marshalling the best brains and brawn of the nation for the performance of the various duties for the successful determination of an early and permanent peace " The duties of the medical profession being protective and restorative and its services valuable to friend and foe alike, its thorough organisation is demanded and the article continues, 'On the brink of conflict, it is time to pause and contemplate the *constructive possibilities for true patriots How can* the medical profession best serve the nation? There should be not merely the development of new organisations requiring new machinery, large funds and scattered centres of interest, but the physicians of the nation, as a whole, should be organised as far as possible through the normal agencies now existent " From all this it seems clear that America, who remained neutral while she could do so without dishonour, has resolved now to enter the quarrel in a spirit of determination which should help to bring about the peace for which the whole civilized world is praying

THE WAR AND HOSPITAL SHIPS

Our columns this week contain two reminders of the merciless nature of the present naval warfare and the dangers to which the officers and men of the Royal Army Medical Corps are exposed on hospital ships When the *Salta* struck a mine in the Channel during bad weather on April 10th five medical men holding commissions as well as nine nursing sisters and 38 orderlies, are presumed to have been drowned Lieutenant-Colonel A G P Gipps's interesting surgical experiences on the *Asturias* remind us that that ill fated vessel, after successfully evading attack by a submarine in February, 1915, was torpedoed on the night of March 20th-21st last, when the casualties among the medical services on board included 11 dead 3 missing (a female staff nurse among them) and 17 injured Ten days later the *Gloucester Castle* was torpedoed, all the wounded on board being saved A new element has thus been introduced into the terrors of warfare and even the wounded man is no longer immune from further injury

Various Experiences in a Hospital Ship

The following experiences in a hospital ship, entitled 'Notes from H M H S *Asturias*," are recorded by Temporary Lieutenant Colonel A G P Gipps, R A M C (T C) —

This ship has been employed as a hospital ship by the War Office since the middle of August, 1914, of which time I have been in command some 17 months Some 350 to 400 operations have been performed on board, entirely by the staff of the Royal Army Medical Corps, which consisted of *six medical officers* besides myself

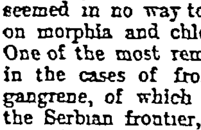
On one voyage some 40 cases of gas gangrene occurred, all in patients taken off Gallipoli during the fighting The gangrene spread so rapidly as to be almost visible in its advance, especially in the trunk None of the various treatments at all seemed to modify the attacks *Some lives were* seemingly saved by amputation high up where the extremities were attacked, even when tissues cut through at the time of operation were far from healthy The very high summer temperature—90° to 104° F —and the fact that there seemed to be millions of flies on board may have had something to do with its virulence and prevalence.

For cases of tetanus the various intrathecal injections recommended were used—presumably all the cases had been inoculated when wounded. The treatment of the cases occurring on board here, though pushed to the extreme, seemed in no way to control the disease, and we fell back on morphia and chloroform to relieve the severe spasms One of the most remarkable outbreaks of tetanus occurred in the cases of frost-bite with (1) moist and (2) dry gangrene, of which we received a number of cases from the Serbian frontier, where there were 23° of frost in the end of November and early in December The onset was quite sudden and was fatal within from 16 to 24 hours This was confirmed to me by other medical officers who dealt with these cases Treatment in no way affected them

The external iliac artery was tied three times for hæmorrhage high up from the femoral in Scarpa s triangle.

A few short notes of two cases of special interest are appended

CASE 1 —Private, received from the trenches on Gallipoli He was suffering from a wound just to the left of the sternum in the fourth intercostal space partially perforating the sternum On the fifth day after his arrival on board a severe hæmorrhage occurred which was temporarily controlled by plugging whilst the patient was being conveyed to the operating table On removing the plug the bleeding recurred with great violence The wound being deep and small, I turned up the left breast to expose the intercostal muscles The bleeding point could not be distinguished, but could be partially controlled by digital pressure At last after several attempts, a pair of pressure forceps caught a portion of the severed vessel and it was then possible to open up the wound and the bleeding was controlled by the further application of forceps. On passing the finger behind the sternum the nickel casing of a bullet was found lying on the pericardium it was squeezed flat into a knife-edge and the heart's action was sawing it up and down, and had divided the internal mammary artery I removed the bullet casing (see figure), tied the internal mammary in the second interspace and removed the controlling forceps The breast, which had been reflected was replaced and stitched in place The patient had no further trouble



Showing size and shape of bulle casing removed from pericardium

CASE 2 —Private, received on board from the fighting in Serbia He was in a very bad way the left patella had been shattered some days previously, and only some fragments remained The wound in front of the knee-joint was as large as my hand Temperature 104° F , pulse 120 The wound was cleansed dressed and the leg temporarily put up on a back splint with foot piece The next day, the patient being worse with severe pain and the temperature over 104 he was placed on the operating table Both synovial pouches in front of the joint and the whole of the joint itself were found full of stinking pus and dirt I laid the whole joint widely open and flushed and washed out with sterile saline the synovial pouches and the rest of the joint and removed the remains of the patella A drain of broad rubber tape was placed on the outer side of the knee, draining through an opening made on the outer side of the popliteal space Finally with a view of sterilising if possible the entire joint it was thoroughly flushed out with ether, the ether being allowed to remain in place some two minutes each time then squeezed out and replaced with fresh this was repeated some half dozen times That night the temperature fell to 99 4° and in the morning was only jus above normal The wound throughout was dressed with dry sterilised gauze, wrung out in sol hyd biniod 1 in 1000 made practically dry The drainage tape was removed at the end of 14 days From the day of the operation the patient never looked back—from being almost a skeleton he became fat and healthy The granulating wound which was of course very extensive after six weeks I grafted in about 14 places of which 11 grafts took When healed over the leg was put up in plaster-of Paris covering the knee joint and extending 6 inches above and below the joint The patient was daily carried on deck and within three months of coming on board was able to walk about the ship with the nominal assistance of a walking stick which however he used but little There was in spite of the loss of the patella a certain amount of power of extension left

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND —At the quarterly examination in Practical Pharmacy held on April 12th the following candidates were successful —

Ernest Horace Bryant and William Barnes Buer Guy s Hospital Horace Braithwaite Bullen Cambridge University and St Bartholomew s Hospital Charles Grinling Bunn Cambridge University and Charing Cross Hospital Benjamin Young Harper Christmas Middlesex Hospital John Rudolph Cox Guy s Hospital Edward Ernest Elt Charing Cross Hospital Mendel Gourevitch London Hospital Norman Bernard de Medina Greenstreet Cambridge University and St Thomas s Hospital Oliver Halstead and Walter Ralph Gill Hearnden Guy s Hospital Gilbert Rashleigh Hull St Thomas s Hospital John Powell Jones Jenkins University College Cardiff and Westminster Hospital Montagu Horace Jupe, London Hospital Salomon Kadinsky Brussels King s College and Westminster Hospital Charles William Lakin Birmingham University Archibald Magill Guy's Hospital Ahmed Othman King's College Gerald Richardson Sharp London Hospital Jacques Spira, St Thomas s Hospital Doris Kathleen Shuttleworth Leeds University Thomas Cowley Stephen Manchester University Ronald Henry Tasker Bristol University Joseph Stanley Thomas London Hospital John Henry Tighe Birmingham University Jose Victory Guy s Hospital and Arthur Winfield Cambridge and Liverpool Universities

UNIVERSITY OF LONDON —At examinations held recently the following candidates were successful —

SECOND EXAMINATION FOR MEDICAL DEGREES, PART II

Iskander Mikhail Abd El Said King's College Julia Bell and Hilda Crichton Bowser London School of Medicine for Women John Vernon Cannadine Braithwaite and William Mark Brown Guy's Hospital Michael Waldo Boone Bulman London Hospital *Alix Jeanne Churchill, London School of Medicine for Women and King's College Harris Cohen University College, Cardiff Hyman Solomon Cohen London Hospital Morris Cohen Guy s Hospital *Simeon Moses Cohen University College Cardiff and St Bartholomew's Hospital Ursula Beatrice Cox London School of Medicine for Women James Fanning London Hospital Raymond Eustace Ford University of Sheffield Reginald Stafford Foss St Thomas s Hospital Pinkus Joseph Freilich King s College Dennis Herbert Geffen University College Jacob Gorsky King s College and Westminster Hospital Dorothy Margaret Greig †*Hilda Treloggen Haggett, *Edith May Hall and Joan Margaret Redford Harris London School of Medicine for Women †Henry Lewis Helmann University College *Oscar Stanley Hillman Middlesex Hospital Graydon Hume Guy s Hospital Hassan Kamal King s College *Reginald Cyril Bell Leslie Guy's Hospital Gdal Leizer Levin King s College Hyman Jacob Levy University College Cardiff and St Bartholomew s Hospital Leslie Lyne Guy s Hospital Charles Dundas Maitland St Thomas s Hospital Ida Caroline Mann, London School of Medicine for Women Grant Massie Guy s Hospital ‡Kathleen Harding Matthews and Sybil Gertrude Overton London School of Medicine for Women Jal Pestonji Padshah University College ‡Dorothy Pantin London School of Medicine for Women Wilfrid Walter Payne Guy s Hospital Norah Dorothy Pinkerton and Beatrice Davidine Pullinger London School of Medicine for Women Charles Nathaniel Read and Henry Elliott Reburn King s College Eleanor Margaret Reece London School of Medicine for Women Rowan William Revell University College Esther Rickards, London School of Medicine for Women Samuel Rosenschein Charles Herbert St John and Albert Ernest Sawday Guy s Hospital Ruth Mary Scutt and Olive Ballance Sharp London School of Medicine for Women Campbell Shaw St Bartholomew s Hospital Marguerite Garnett Sheldon University of Liverpool Ernest Livingstone Sergeant London Hospital Vanda Patten Thomas London School of Medicine for Women Alfred Basil Keith Watkins London Hospital Eric Roland Webb Guy s Hospital and Jane Edith Wood University of Leeds

* Distinguished in Anatomy † Distinguished in Physiology

‡ Distinguished in Pharmacology

SOCIETY OF APOTHECARIES OF LONDON —At examinations held recently the following candidates were successful —

Materia Medica and Pharmacy —H P Hodge Oxford J Stephen Manchester and T T Tiplady Durham

Anatomy —L. Bernstein King's College K. J H Davies Guy s Hospital J L. Delicati Bristol J Flanagan Liverpool H D Hoggard Middlesex Hospital J S Jones University College Hospital M S Jones Manchester M Korn, London Hospital L. E Lewis Cardiff and Glasgow A. McKenzie Guy s Hospital J A. Marriott Manchester G G Newman London Hospital H E Reburn, King s College W H Shipway Bristol N G Thomson Cambridge T T Tiplady Durham and W G D H Urwick St Bartholomew s Hospital.

Physiology —L. Bernstein King s College K. J H Davies Guy s Hospital J L Delicati Bristol J Flanagan Liverpool H D Hoggard Middlesex Hospital W T Johnson Birmingham M S Jones Manchester M. Korn London Hospital L. E Lewis Cardiff and Glasgow A McKenzie Guy s Hospital J A Marriott Manchester G G Newman London Hospital H E Reburn King s College S K Rigg Bristol S Robinson, Belfast W H Shipway Bristol N G Thomson Cambridge W G D H Urwick St Bartholomew s Hospital and A. A Weinger King s College

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW —At examinations held recently the following candidates were successful —

SECOND EXAMINATION

Lizzie Robertson Clark Angus Macdonald Frank Arthur Smorfitt, George Coote Field Donald Macdonald MacLeod, Robert Berry Forgan Walter Granville Carew Thomas Arnoldus du Toit John Binnie Taylor, and William Harvie Kerr

Physiology —John Murray

THIRD EXAMINATION

Thomas Blaney, Thomas Ferguson Minford Alan Herbert Brooke Hudson, Hugh William Howatson William Gibb Jung Bahadur Singh Rebecca Goodman Andrew Wood Smith, Norman Joseph Patterson and *John Alfred Alexander Duncan*

Materia Medica —Andre Antoine Lamaletie, Alexander Forsyth Caddell Philip George Bainbridge and Charles Leonard Webb Fleming

FINAL EXAMINATION

William Archibald Mein John Adami Frederick Joseph Jack, Alfred Edwin Elliott, and William McElroy

Medicine —*John Boyd* and *Samuel Amery Faulkner*

Surgery —William Ulic *Desmond Longford* Phœbe Foott Frank Moffat Haldane Sanderson, and Jackson Baird Minford

Midwifery —William Ulic *Desmond Longford Harold Congoult* Smith Frank Moffat Haldane Sanderson John Lavens West, and Jackson Baird Minford

Medical Jurisprudence —Hendrik Wildeboor, Daniel Colin McNair Lewis Windermere Nott, Eliza Jean Stuart Mahmoud Abdel Kader Mofreh Ernest Ebenezer Bronstorph and James Henry Brown

UNIVERSITY OF GLASGOW —*In the examination* for the degrees of Bachelor of Medicine (M B) and *Bachelor* of Surgery (Ch B), held recently, the following candidates were *successful in the subjects indicated*—A., anatomy, P, physiology, M, materia medica and therapeutics, Path , pathology —

John Smith Aitken (A P) Carl Otto Anderson (M) John *David* Arthur (M) William Barras (Path) Alexander Shanks Bisset (M) Donald Cameron Bowie (Path) Donald Campbell Buchanan (Path) William George Burns (M) Malcolm Chalmers (M), Alexander Ebenezer Cochrane (Path) Alexander Conner Connell (Path.) George Michael Cooper (A , P) Cyril Lockhart Cottle (M), Harold Livingstone Coulthard (M) *Edward* Mitchell Erskine Cumming (Path) Andrew Murdoch Davidson (M) John Donald (M), *John* Campbell *Dow* (M , Path) Basil William Henry Fergus (M) Thomas Fleming (Path) Allan *Donald Fraser* (M Path) *Kenneth John Alexander Gillanders* (Path) George Osmond Grant (M) Peter Fife Auchinachie Grant (Path) James Alexander Moore Hall (A., P) James Anthony Hamilton (M Path) John Forrest Hamilton (M) Humphrey Josh Hollis (M.) George Jamieson (P) John Alexander Jenkins (Path), Arthur *Kennedy* (M Path.) John Kirk (M), James Campbell Laurie (M Path) Douglas Marshall Lindsay (A.) Alan *James MacArtney* (M Path), *Duncan* MacColl (Path) Robert M Courtney (M.) Walter Stewart M Intyre (A P) Donald Mackenzie (A. P), Andrew Aird M Laughland (A. P) Angus Maclean (M Path) *Donald* Maclean (M), John Macleod (M , Path) Roderick Montague Macpherson (P) John Spence Meighan (M) Sylvester Henry Meiring (M) George Macleod Millar (A P) Livingstone Mitchell (M), John Nicol (M) John *Nicolson* (Path) John William Peden (M) Andrew Glen Petrie (A P), John Browning Potter (Path) Rahmat Ullah Qureshi (Path), Francisco Ribeiro (M) James Morrison Ritchie (M) Ian Menteith Robertson (Path) Joseph Sachs (P) William Scotland (Path) William Scott (A P) Ralph Paterson Smith (M Path) Herbert Harold Spencer (A P , M) Donald Stewart (P , M) Alexander Strang (A P) John Leonard Turpie (A., P) Alexander Ross Waddell (Path) James Alexander Walls (A.), Hugh Wands (M , Path), and William Alexander Wilson (A. P)

Women —*Ellen Davidson Anderson (Path),* Marjorie Mason Anderson (A. P) Annie Burns Cameron (P) Grace Chatterton (Path) Louise Denli (A. P) Charlotte Ann Douglas (A P) Margaret Hogg Grant (M.), Margaret Gray (A P) Lillias Beverley Hardie (Path) Alison Mary Hunter (M) Margaret Logan (P), Isabella Quarrier M'Fadzean (Path) Ellen Thomson MacKenzie (A. P) Annie Isabel Christian Maclardy (A P) Florence Frances Mitchell Milne (M) *Kathleen Nicol* (M) Vida Johnston Perry (M) Margaret Nelson Robertson (M), Eliza Dorothea Sandison (P) Katherine Scott (M Path) Jane Elder Shortt (Path) and Catriona Sinclair (P)

Third Professional Examination (Old Regulations) —Thomas Crawford (M)

The following have passed in Medical Jurisprudence and Public Health of the Fourth Professional Examination (New Medical Ordinance) —

Roderick Bethune, Donald Campbell Buchanan, Basil William Henry Fergus, George Keith Fulton James Biggam *Douglas Galbraith* Adam Smith Goudie James Charles Hendrie Donald Macqueen William M William Archibald Sutherland Strachan, and Joseph Turner Taylor

Women —Annetta Gillies Turnbull Anderson, Mabel Nellie Blake Margharita Mary Lamont Couper Grace Anderson Fleming Jane Evelyn Hanson, Janet Whyte Hepburn Mary Reid Knight Agnes Purcell M Gavin May Constance *Boughton Leigh* Margaret Turner M'George, Jessie Napier Robertson, Agnes Petrina Routledge Dorothea Helen Suttie, and Lydia Ida Huber Torrance

The following have passed in *Medical Jurisprudence* and Public Health of the Third *Professional* Examination (Old Medical Ordinance) —

Thomas Watson Carstairs *Thomas Fleming*, and John Nicolson.

The following candidates passed the whole of the examinations for the above degrees —

John William Waddell Baillie Monindra Nath Bhattacharjee Archibald M Allister Blackwood, Mabel Nellie Blake, John MacDougall Clark Andrew Dick, Samuel Norman Dykes, Lewis Livingstone Fotheringham Margaret Hutchison Glen *William* Hadden Gordon, David Heard Frederick William Hebblethwaite, Henry Fielden Hollis James Robert Riddell Holms, William Hogarth Kerr James Liddell Frederick Colquhoun Logan Kenneth *M Alpine Arthur Daniel Clark* M Gowan, May Elizabeth MacIver Donald William Morison MacKenzie William Duff Miller William Harold Palmer James Walker Patterson May Isabella Turner Reid, Angus M Alpine Scott, Henry Buchan Sergeant, Andrew Wauchope Smith Clarence Lorraine Somerville Douglas Stuart Stevenson Pat Adam Stewart, Marion Watson Mary MacLean Weir Robert Wiggins and John Thomas Wylie

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC —At the recent Hilary examinations the following candidates were successful —

INTERMEDIATE MEDICAL EXAMINATION

Part II , Anatomy and Physiology —Wouter de Vos Scholtz, Harris *Cohen, Henry Allman Lavelle, Donal Victor* Latham (omitting Organic Chemistry) and Johan Frederick Wicht (omitting Organic Chemistry)

Applied Anatomy and Applied Physiology —Thomas Henry Coolican (high marks) Reuben Resnekov (high marks), Richard Comihan Noelle Long Henry Blundell Van der Merwe John Gerrard Holmes Alewyn Johannes Vorster Gertrude Rice, John Charles *Callanan* Albert Hugh Thompson Jan Jacobus *Gabriel* de Kock Victor George Walker John Farnsworth Sheppard, Arthur Leslie Gregg Cyril Daniel Brink Becher FitzJames Haythornthwaite Cecil Joseph Quinlan Abgar Read Alden, Richard Dominic Murphy Thomas James Russell Warren Richard William Shaw Harris Cohen, William Andrew Byrn Samuel John Laverty William Richard Burns Athanas Blagoff William Joseph Hogan Jessie Gilbert Lionel Wigoder Johannes Tobias Myuhardt, and Alfred John Beckett

FINAL EXAMINATION

Part I Medical Jurisprudence and Hygiene Materia Medica and Therapeutics Pathology —William Leech Young (high marks) Robert Meade *Daly* Devereux (high marks) Johannes Cornelis Fouché Eric James Lyndon Leslie James Nugent, John Benson McGranahan, Eric Stuart Mack Kenneth MacGregor Greer Olive Gertrude Blackam Frank Ferguson Benjamin Dames Merrin Frederick John Dymoke Francis John Gerrard Battersby (omitting Pathology) *Arthur *Leslie Gregg* **Francis Assisium McHugh* *Bryan Austin McSwiney *William Alfred Shannon *Eric Reginald Tivy and †Margaret Wolfe

* Pathology completing examination

† Medical Jurisprudence and Hygiene completing examination.

Part II B A O , Midwifery and Gynæcology —Edward D Arcy McCrea Alexander Richard Barlas Bryan Austin McSwiney Margaret Wolfe *Percy Crowe Parr* Joseph Roland Brennan Hastings Harley Molloy Thomas Tabuteau Paul Herbert Shelly Smith Patrick Casey Thomas Hugh Robinson McKiernan, and John James Keatley

B Ch Surgery —James Arthur William Cullen (high marks) George Bernard Shaw Henry Banks, Henry James Rice Paul Herbert Shelly Smith and Hirsh Brill

M B Medicine —Alexander Richard Barlas (high marks) *Edward* D Arcy McCrea (high marks) James Carter O Gilvie, Paul Herbert Shelly Smith William Frederick Wicht Olive Gertrude Blackham *Pieter Johannes Swanepoel.* Willem Petrus Lubbe Gilbert Marshall James Arthur William Cullen Thomas Edward Hill and Hastings Harley Molloy

Dental (B Dent Sc.) —John Henry James Stuart

DIPLOMA IN PUBLIC HEALTH (D P H)

Part I Chemistry, Meteorology, and Bacteriology —Thomas Kirkwood and Bagenal Harvey Mellon

Part II Sanitary Engineering Vital Statistics Hygiene and Epidemiology —Bagenal Harvey Mellon.

LITERARY INTELLIGENCE —Mr Heinemann announces the immediate issue of a treatise on Malingering by Dr A. Bassett Jones and Dr R Ll J Llewellyn.

THE Council of the Medical Society of London have awarded the Fothergillian medal for 1917 to Sir Leonard Rogers, I M S , C I E , F R S , of the Medical College, Calcutta, in consideration of his work on Dysenteries, their Differentiation and Treatment

THE Society of the Swedish *Physicians* (Svenska Läkaresällskapet) has elected Colonel Robert Jones, C B , Inspector of Military Orthopædics, to be a foreign member of the society The honour was conferred at the instance of Dr Haglund, professor of orthopædics, Stockholm, supported by the professor of surgery, Dr John Berg, and by Dr Henning Waldenstrom, lecturer on orthopædics

ROYAL SOCIETY OF ARTS —The following lectures will be delivered during April and May on Wednesday afternoons at 4.30 —April 25th, Sir Francis Fox on Flour and Bread, May 2nd, Mr J C Shenstone on Herb Growing in the British Empire, May 16th, Sir C Arthur Pearson on the Blind Sufferers from the War and their Future Employment.

PAYMENT FOR THE DOMICILIARY TREATMENT OF TUBERCULOSIS IN BELFAST —A Belfast correspondent writes —"Three members of the city council of Belfast—Dr J D Williamson, Dr R Thomson and *Dr* S Allworthy —have resigned in order to make their position clear in connexion with payments made to them by the council for the domiciliary treatment of pulmonary tuberculosis (see THE LANCET, April 7th, p 556) Probably when the new Municipal Bodies Emergency Act is passed the whole question will be put upon an entirely *different* footing"

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

BOYD R. M. M B., Ch B Aberd has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Braemar District of the county of Aberdeen

FISHER, H P M B Camb., Certifying Surgeon under the Factory and Workshop Acts for the Atherstone District of the county of Warwick

HIGGIN ROBERT FRANCIS B.A. M D., B C Cantab., L.R.C P., M.R.C S., Acting Medical Officer to the Newton Abbot (Devon) Union Workhouse

PROCTER, J A., L S A. Lond Certifying Surgeon under the Factory and Workshop Acts for the Lydd District of the county of Kent

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

ANGLO-RUSSIAN HOSPITAL, 32, Victoria-street S W —Two Surgeons for Russia.

BARNSLEY BECKETT HOSPITAL.—Honorary Staff for Out patients (Two Vacancies)

BARROW IN FURNESS NORTH LONSDALE HOSPITAL.—Second House Surgeon Salary £250 per annum with board &c

BETHNAL GREEN INFIRMARY Waterloo House, Waterloo-road E —Assistant Medical Officer Salary at rate of £250 per annum.

BOLTON INFIRMARY AND DISPENSARY —Second House Surgeon. Salary £200 per annum, with board &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL, Boscombe Branch.—House Surgeon. Salary £125 and extras, with board &

BRADFORD CITY EDUCATION COMMITTEE.—Temporary Assistants to School Medical Officer

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon. Salary at rate of £120 per annum with board &c.

BURNLEY VICTORIA HOSPITAL.—House Surgeon. Salary £160 per annum with board &c.

BURNLEY UNION —Resident Assistant Medical Officer Salary £300 per annum with rations, &c

BURY INFIRMARY —Junior House Surgeon. Salary £150 per annum, with board &c.

BURY AND DISTRICT JOINT HOSPITAL BOARD —Assistant to Medical Superintendent. Salary £250 per annum, with board, &c.

CHESTER ROYAL INFIRMARY —Assistant House Surgeon Salary £150 per annum with board &c

CLINICAL RESEARCH ASSOCIATION LIMITED Watergate House, York Buildings Adelphi W C —Medical Man or Woman for service in Laboratories

GREAT NORTHERN CENTRAL HOSPITAL, Holloway road, N —Resident Medical Officer Salary £200 per annum with board &c

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST Brompton. —House Physician for six months Salary 30 guineas

HUDDERSFIELD STORTHES HALL ASYLUM Kirkburton, near Huddersfield —Locum Tenens Salary £7 7s per week with board &c.

KENT COUNTY COUNCIL.—Tuberculosis Officer Salary at rate of £500 per annum &c.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon Salary £125 per annum with board &c.

MANCHESTER, ANCOATS HOSPITAL.—House Physician Salary £200 per annum with board &c.

MANCHESTER, BAGULEY SANATORIUM FOR TUBERCULOSIS —First Assistant Medical Officer unmarried. Salary £350 per annum, with board &c

METROPOLITAN HOSPITAL, TUBERCULOSIS DISPENSARY FOR THE METROPOLITAN BOROUGHS OF HACKNEY AND STOKE NEWINGTON Kingsland road E —Temporary Medical Officer Salary at rate of £500 per annum

NETLEY WELSH HOSPITAL.—Medical Officer for Pathological Department Salary £400 per annum with board &c

NEW HOSPITAL FOR WOMEN Euston road N W —Female Assistant Physician and Assistant Surgeon.

NEWCASTLE UPON TYNE ROYAL VICTORIA INFIRMARY —Four House Physicians Five House Surgeon Two Accident room House Surgeons House Surgeon to Aural and Ophthalmic Department House Surgeon to Gynæcological Department, House Surgeon to Skin and Venereal Department, House Surgeon to Out patient Dressing Department

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon. Salary £200 per annum with board &c Also Two Junior House Surgeons Salaries £150 per annum with board &c.

NOTTINGHAM GENERAL HOSPITAL.—Two Assistant House Surgeons for six months Salary at rate of £250 per annum each board &c

[illegible] EDUCATION COMMITTEE.—Female Assistant School Medical Officer Salary £300 per annum

PLAISTOW FEVER HOSPITAL, London E —Female Temporary Resident Medical Officer to take Clinical Charge of the Dagenham Sanatorium for Pulmonary Tuberculosis Salary at rate of £250 per annum and all found

[illegible] ROYAL INFIRMARY —Resident Medical and Surgical Officer Salary £1[illegible]0 per annum with board &c

QUEEN'S HOSPITAL FOR CHILDREN Hackney road Bethnal Green E —[illegible] House Physician for six months Salary £1[illegible]0 per annum [illegible]

[illegible] HARRINGTON [illegible] HOSPITAL [illegible] —Senior Resident House Surgeon [illegible] per annum with board &c. [illegible] Salary at rate of £1[illegible] per annum with [illegible]

ROTHERHAM HOSPITAL.—Junior House Surgeon Salary £150 per annum, with board &c.

ROYAL FREE HOSPITAL, Gray's Inn road W C —Senior Resident Medical Officer Salary £200 per annum Also House Physician (salary £50 per annum with board &c.) and Junior Obstetric Physician (salary £62 per annum with board &c) to include duties at Endsleigh Maternity Hospital Salary given

SHEFFIELD ROYAL INFIRMARY —House Physician. Salary £120 per annum, with board, &c.

SHREWSBURY SHIRLETT SANATORIUM Shropshire —Temporary Assistant Resident Medical Superintendent Salary £300 per annum

SOUTH LONDON HOSPITAL FOR WOMEN 103 South Side Clapham Common S W —Female House Physician for six months. Salary at rate of £100 per annum with board, &c.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon Salary £120 per annum with board, &c.

WEST RIDING OF YORKSHIRE.—Two Temporary School Medical Inspectors Salary £320 per annum

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY —Resident House Surgeon. Salary £150 per annum with board &c

THE Chief Inspector of Factories Home Office London S W , gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Annan at Brampton and at Tamworth.

Births, Marriages, and Deaths.

BIRTHS.

KELLOCK.—On April 15th at 2 Upper Wimpole-street, the wife of Thomas H Kellock M C F R C S of a son

MARSHALL.—On April 10th, at Cambridge, the wife of Russell H. S Marshall R.A.M C of a son

MCKELLAR.—On April 17th at Chester-le-Street, County Durham the wife of Dr W A. McKellar of a son.

WATT —On April 9th, Dorothy the wife of James Watt M.D., Medical Superintendent Odsal Sanatorium Bradford, of a son

WILSON —On April 12th at Devonshire-street W the wife of Alex Wilson M D Captain R.A M C of Crest House, Putney Bridge-road S W of a daughter

MARRIAGES

ACKLAND—BUCKLE.—On April 10th at St. Mary Abbots, Kensington, William Robert Ackland Major R.A.M.C T to Georgina, widow of Henry Buckle Burma Commission (retired)

BELL—CLAYSON —On March 19th, at St. Andrew s Farnham Surrey William Ker Bell, Captain R.A.M.C to Katherine B Clayson of Eastleigh Farnham.

EGAN—MASON —On April 11th at St. James s, Piccadilly W Staff Surgeon Percy Blackwood Egan M.D R.N., to Rosalie Stella youngest daughter of the late Mr O A. T Mason D L R.I C of Grangefoyle Strabane, and of Mrs Mason Bray Ireland

GRAVES—PADDAY —On April 11th at St Barnabas, Kensington, W George Henry Fullarton Graves, Temporary Lieutenant, R.A.M C to Linda Maud of Holland road, Kensington W eldest daughter of the late Reginald H Padday of Singapore

WILSON—HODGE.—On April 12th, at Hyndland Church Glasgow George Hanswell Wilson M B. Ch B., to Amy Lawrence, youngest daughter of Mr and Mrs. William Hodge, Montgomerie-drive Glasgow

DEATHS

HAWES —On April 10th through the sinking of H.M H.S *Salta* Godfrey Charles Browne Hawes of Pangbourne Berks Temporary Captain R.A.M C J P M R.C S., L R C.P L.S A.

JONES —On April 13th after a short illness at his residence 16A Abercromby-square, Liverpool aged 53 years Hugh Richard Jones, M D

KING —On April 11th, at S Cyprian s Stratton Cornwall, John King M R C S J P in his 73rd year

LUNN —On March 5th at a hospital in India, as the result of an accident Captain Henry Anderson Lunn, R A.M.C

POTTER.—On April 9th 1917 suddenly at Brighton Henry Perry Potter M D F R.C S D.P H., of Kensington Infirmary for 37 years Medical Superintendent aged 63 years

RUTHERFORD —On April 11th at St Thomas s Hospital, London Leonard Trevelyan Rutherford M A. M B Cantab aged 29

TAYLOR.—On April 10th, at Windsor Surgeon-General Sir William Taylor K.C.B late Director General Army Medical Service aged 74 years

THOMPSON —On April 9th at Grenville House Bideford Charles Sinclair Thompson M B

N.B.—A fee of 5s is charged for the insertion of Notices of Births, Marriages and Deaths

DOCTORS OF MILITARY AGE THE SQUABBLE AT LETTERKENNY —An Irish correspondent writes "An extraordinary scene occurred at a meeting of the Letterkenny Board of Guardians on April 13th It will be recollected that at a recent election for dispensary doctor there were two candidates, Dr W N Walker and Dr J P McGinley The latter was elected but as he was of military age the Local Government Board refused its sanction The guardians adhere to their decision and an amusing situation has arisen Dr McGinley treating patients at the guardians' dispensary and Dr Walker at his private surgery the tickets authorising each doctor to attend patients being signed by the guardians according to their view as to who is really the legally appointed doctor At the last meeting of the board when the pay sheets of the doctors were submitted for the chairman s signature the first pay sheet was snatched from him and he himself was forcibly ejected from the chair A wild scene of disorder followed "

Notes, Short Comments, and Answers to Correspondents.

MEDICAL NOTES IN HISTORICAL MANUSCRIPTS THE STUART PAPERS

We give below the concluding excerpts from Part VI of the Stuart Papers The first and second instalments appeared in our issues of April 7th (p 558) and 14th (p 594) respectively

Health of James III —Operation for Fistula

Pope Clement XI to James III —1716 May 19 Santa Maria Maggiore, Rome —Granting him permission on account of his health to eat meat eggs &c, on fast days with an exception as regards meat in Holy Week

The Duke of Mar to Lieut. General Dillon —1716, Oct. 4 —' James has been a good deal out of order for some time with the piles and though he be now in a fair way of recovery, I hope yet he is not so easy that he can write

Queen Mary to the Duke of Mar —1716 Oct 10 — 'As soon as I had read your letter I sent for Mr Inese who you know may be trusted and consulted with him which way wee should take to gett a good chirurgien to send to Avignon without letting so much as himself know who he went for wee resolved to employe Dr Maghie in this affair since I dare not appear in it myself he is honest and is acquainted with several good chirurgiens and I hope will keep the secret which I earnestly recommended to him I was in hopes all this would have been done this morning and ther was a chair ready with post horses but an houre ago Dr Maghie brought me the enclosed from Mr Inese and gave me an account of all he has done in this affair, which I made him put in writting and here I send it you but I will not seal up this letter till 6 o clock, by which time Dr Maghie has promised to lett me know positively whether Guerin will go and what day If wee cannot prevail with him wee must take one that he will answer for nay, he says he cannot go himself without consulting Marechal of whom he mucch depends so that wee cannot hinder that, but Dr Maghie assures me that non of them thinks any mor than that it is a man of quality com out of England that hides himself and will not be known to any whicch I hope they will still beleeve and suspect nothing els' In all the trouble I am in which you may much easier imagine than I can express it it is a comfort to me to have you near the King I am confident you will be of great use to him in persuading him to be exact in performing the doctors and chirurgiens prescriptions and in keeping company and businesse from him

The enclosure referred to in the above is as follows —

L Inese to Queen Mary —1716 Saturday Oct. 10 10 A M — Your Majesty cannot imagine what difficulty there is to find an able surgeon that will go so far on such short warning they being all engaged with patients they cannot quit on a sudden I thought it necessary to send Dr Maghie to inform you of what they say he having spoke with them and all of them being of opinion that there can be no danger in some days delay The courier that came up has been very indiscreet having told everybody he was sent by the king to your Majesty You will be pleased to give your orders to Dr Maghie who has taken great pains last night and this morning

Statement by Dr John Maghie — As soon as I received the Queen s orders last night from Mr Inese I went immediately to Thibaut, the chief surgeon in the Hotel Dieu one famous in the case He told me it was impossible for him to make the journey on any account He recommended Collignon with whom I was early this morning and likewise with Monsr Arnaud both so engaged that they cannot go Afterwards I went to Guerin one as expert as any of the others He likewise cannot go immediately but I have hopes to prevail with him in a few days Observe that Thibaut Arnaud and Guerin agree that there can be no danger in delaying the operation for some eight ten, or twelve days—nay Arnaud said fifteen or three weeks However no time shall be lost in sending one as soon as possible in whom one can have entire confidence"

I Inese to Queen Mary —1716 Sat Oct. 10 4 o clock — 'Dr Maghie has just come in and desires your Majesty to be informed that he has been again with Dr Guerin who now thinks he can part from this in three days but he must first speak with M Marechal on whom he depends He will give his positive answer to-morrow As most of such people have an eye to their own interest and it cannot be told them who the person is they are to trust this M Guerin made a bargain what he is to have as he must be absent three weeks or a month and lose his practice which is considerable in the meantime The doctor thinks he should be offered 3000 livres to be secured him when the operation is over and all his charges going and returning If you approve pray let me know and the offer shall be made to-morrow when I see him or in the manner you think fit, but too great an offer might probably give him suspicion who the person is He may be told that if all succeeds he shall have a recompense over and above"

L Inese to the Duke of Mar —1716, Oct 13 Paris.—' You will receive this from M Guerin who is by all esteemed one of the ablest chirurgeons of Paris and of the greatest experience in the operation he now goes about, and has been always successful in all he has undertaken He is an élève of the famous M Marechal and employed by him in the most difficult operations of this kind I have given him assurance of 3000 livres besides all his charges and of a reasonable present besides when the operation is happily over I dared not offer more for fear of giving him suspicion nor could I offer less being informed he gains sometimes 3000 livres in a month without going out of Paris He only knows it is a person of quality he is to treat who will not be named for fear of alarming his relations but suspects it is either Ormonde or Mar

Queen Mary to the Duke of Mar —1716 Oct. 17 *Chaillot.*— 'I dare not send the enclosed to the King for fear the operation should be over before this comes to Avignon but I dare not omitt sending it to you that you may know what is said and take your measures accordingly The King and the Duke of Ormond know this fair lady [Olive Trant] very well She certainly means well but one must not believe all that is sayd .. I pray God direct you and the Duke of Ormonde to do what s best, but if the operation be not made the King should be informed of this and decide himself

The enclosure referred to in the foregoing is as follows —

Olive Trant to Queen Mary — The surgeon Marechal s *nephew* who is gone to the King is reputed to be very stupid Chirac, whom I have just seen tells me there is one Barancy a surgeon now living at Montpellier who is one of the most able in France and it is important that he should attend the King with Guerin, who is no so able as might be wished There is still time to send Barancy Your Majesty will have the kindness not to quote Charac as to what I have said about Guerin but he is willing to be [quoted?] about Barancy s ability

The Duke of Mar to Sir H Paterson —1716 Oct 21.—"When I tell you that James was this morning cut of a fistula *in ano* you will not wonder that I am in a hurry having letters to write every where upon it I thank God it is well over and he out of danger He endured the operation with all the fortitude in the world I was by and was grieved with the King but charmed with the spirit he showed The operation lasted about five minutes and was very well performed by Guerin a chirurgeon we had sent for from Paris. He had ten cuts of the knife and scissors but the wound is not deep. Both the doctor and chirurgeon assure us that there is no further danger and he is as calm and tranquil as possibly can be expected, without the least appearance of any fever They will report him dead I doubt not. who wish it; therefore it would do well that you could have a right account of it put into your newspapers Since it was God s pleasure he should have this illness it has not taken him in an unlucky time for it will give him and his friends time to look about them before they be sent a travelling if that must needs come. It will be two months before he be in a condition to go anywhere and sure they will not be so barbarous as to force him to it before he be safe, and before two months expire tis hard to tell what may cast up (Further letters show that James s recovery was slow, but without complications)

The Duke of Mar to Monsieur Stiernhock —1718 May 24 —"My master [James III] had been a little indisposed for a few days before he had the news of the Queen s death and had some symptoms of an ague so that account came very unseasonably for that and many other reasons His indisposition was but slight occasioned as far as we can judge by the sudden change from excessive heat to very cold which had the same effect on more of us, but I hope a few doses of the bark will carry it off

James III to his cousin the Duchess of Hanover —1718 Friday May 27 —"A slight recurrence of tertian fever prevents me from writing to you with my own hand"

James III to the Prince De Vaudemont —1718 June 26, Urbino.—"I should have long since sought some consolation from you had I not been for two months prostrated by a fever which has prevented me from the least application

Lieutenant General Dillon to the Duke of Mar —1718 Saturday June 4 — I am much troubled to find the King s ague continues I hope it will soon be over and beseech the Almighty to comfort him in his just affliction Nairne advised me of the King s taking a vomit 7 May and of his being somewhat weak two days after No violent remedy can be good for his constitution and it is not very usual to make an experience on persons of his rank it being a nice point and not practised except in great extremities The doctor ought to know best, though it be very sure his prescription will meet with little or no approbation among the physicians here

COMFORTS FOR THE FORCES

Mr John Penoyre, writing on behalf of Sir Edward Ward, Director General of Voluntary Organisations, says that last year the interval between the last cold night of spring and the first chills of autumn was overestimated, and that this year a vast store of sweaters, mufflers, helmets, mittens, and socks will be wanted by August 1st These should be sent, when the time draws near, either to the D G V O's Depôt, 45, Horseferry road, S W 1, or to Mr Penoyre, 8, King's Bench Walk, Inner Temple E C 4 Easily knitted patterns of any of the articles mentioned can be had free on application

ECONOMY IN RUBBER GLOVES

To the Editor of The Lancet

Sir,—Referring to a letter appearing in your issue of March 31st on the above subject I have examined these repairs, and think that, from the surgeon's point of view, they are satisfactory From the public point of view it would appear that the saving to be effected certainly warrants an immediate trial of this method by all hospital authorities, and in particular by the Royal Army Medical Corps controlling the military beds

I am, Sir, yours faithfully
W Arbuthnot Lane

Cavendish square W April 9th 1917

To the Editor of The Lancet

Sir,—In your issue of March 31st last appeared a letter on the repair of surgical rubber gloves by a new process The amount spent on these gloves is understated, some hospitals must spend £500 or more a year on them I have used gloves repaired in the manner described for some years at the Leicester Royal Infirmary The puncture repairs are so small as to be almost unnoticeable Of course, when rubber has become brittle from repeated sterilisation at a high temperature any repair is useless A fair proportion of gloves, however, are injured whilst the rubber is still in good condition, either by puncture with the needle or by manipulation (more particularly in bone operations), or even by pulling them on roughly Most of these latter are capable of repair The proportion repairable, however, must vary very considerably depending on the class of operation, &c Many hospitals repair their own punctures with rubber solution, even they, however, would be well advised to try the Leicester method for larger tears.

I am, Sir, yours faithfully,
HENRY J BLAKESLEY, F.R C S Eng,
Major R.A.M C T. Senior Honorary Surgeon Leicester
April 14th 1917 Royal Infirmary

THE CHEMICALISING OF CORPSES

THERE appear to be good reasons for believing that the Germans are utilising the bodies of their dead by committing them to a chemical treatment which, for one thing, yields fat and for another, a nitrogenous powder which serves so it is stated, to enrich pig feed, and, yet for another, the mineral phosphate of the bones to be used as a fertiliser in the field The recovery of fat by what may appear to be a gruesome policy means, of course, a source of material for the making of glycerine and its nitro-derivative The total amount of fat in the human body varies immensely, but it may be said to range from 2·5 to 5 per cent of the body weight It is easy to see that in a period of heavy casualties this method for the disposal of the dead will yield a very material amount of glycerine Thus, a thousand bodies at an average weight of 10 stone (140 lb) would yield on an average of a 3 per cent. basis of fat per body weight about 2 tons of fat capable of being turned into a tenth of its weight of glycerine—i e, 4 cwt As the published number of killed far exceeds this the output of glycerine may have been increased proportionally not to mention the soap incidentally produced The dividends of the enterprising company known as the Kadaververwertungsanstalt (Corpse Utilisation Establishment) may, according to this calculation, be quite satisfactory to the directors and shareholders, enabling them to face criticism with complacency

PROLONGED NASAL FEEDING

To the Editor of THE LANCET

SIR —A man was admitted to this asylum in 1885 and has just died here at the age of 81 For several years he had to be spoon fed after his admission, but for the last 21 years and 7 months he was fed three times daily through the nasal tube He enjoyed excellent health until the last three months, when his health began to fail I never heard of his taking a drink of water for all these years but during the last two days of his life he took warm milk from a fellow patient but not from an attendant. The following was his daily diet scale —

Breakfast One quart of milk, two eggs and 1½ oz. of sugar Dinner One quart of beef tea, or beef fluid made from bovril or oxo and one or two potatoes, mashed fine enough to go through the nasal tube Supper One quart of milk, one egg and 1½ oz. of sugar

Is this a record in prolonged nasal feeding?

I am, Sir yours faithfully,
E E MOORE M D Dub,
Medical Superintendent
Donegal District Asylum Letterkenny April 12th, 1917

HEALTH OF ST LUCIA.

A REPORT on the colony of St Lucia for the year 1915–16 has just been presented to Parliament From this it appears that the population is estimated to consist of 24,115 males and 28 167 females—total 52 282—a slight increase as compared with the previous year The birth rate for 1915–16 was 33 per 1000 of the population and the death rate 19 7 per 1000 There were two deaths from snake-bite and one from scorpion bite All the medical officers report the health conditions of the year to have been favourable The hookworm campaign inaugurated at the expense of the International Health Commission continued its work under the direction of Dr Stanley Branch, a local district medical officer seconded for this purpose and side by side with this campaign the Government is adopting measures for the improvement of the sanitary conditions in the colony generally The Victoria Hospital at Castries is the one general hospital for the colony and the daily average number of patients was 70 The construction of a wing for private paying patients has been commenced Small buildings are provided in the out-districts at Soufriere Dennery and Vieux Fort which are used as casualty hospitals for accident and emergency cases and there are visiting stations at various points where medical officers attend regularly on fixed days for the treatment of out-door cases of sickness

The yaws hospital which is in the vicinity of the Poor Asylum at Malgre-toute had a daily average of 43 2 patients The voluntary influx of patients for treatment with arsenobenzol continued unabated during the year and [illegible] cases were treated The medical officer in charge Dr A F Hughes reports that up to date he had treated 1188 cases and that out of this number there had been 63 cases of recurrence of the disease In this latter connexion the medical officer refers to the difficulty of his distinguishing between bona fide recurrences and cases of reinfection

SPRUE

REFERRING to the annotation which appeared under the above heading in our issue of last week, Mr John Ward, of the Crookes Laboratories, states that the use of collosol argentum in this disease was mentioned in papers read before the annual meetings of the British Medical Association in 1913 and 1914 notably by Mr James Cantlie Further experience, he adds, indicates the alternate use of collosol argentum and collosol iodine—of course, by internal administration

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Recruits —The fees should, in our opinion, be included in our correspondent's return for income-tax, as the profit arising therefrom can scarcely be defined as profit arising from a single or casual transaction outside the usual scope of the profession The point might be put before the district surveyor of taxes, whose advice is usually sound and impartial.

Medical Diary for the ensuing Week.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W

MEETING OF SECTION
Friday April 27th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S Blundell Bankart, E A. Cockayne, C P Lapage) at 4.30 P.M.

Cases

Dr F Parkes Weber (1) Lipodystrophia Progressiva in a Male, (2) Congenital Letter-blindness—Congenital Alexia and Agraphia without Aphasia (3) Bilateral Optic Nerve Atrophy in a Child with Positive Wassermann Reaction and History of Infantile Convulsions.

Specimen

Dr E A. Cockayne A Case of Congenital Defect of the Duodenum in which Bile was Found both Above and Below the Absent Portion.

Paper

Dr H. C Cameron: Status Lymphaticus from the Clinical Standpoint.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn Fields W C

Museum Demonstrations (Pathology) for Medical Students and Practitioners and First Aid and Ambulance Students —

MONDAY —5 P.M. Mr S. G Shattock Gunshot Injuries.

POST GRADUATE COLLEGE West London Hospital, Hammersmith-road W

MONDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Gray Operations Mr B Harman: Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Baldwin: Operations Dr Banks Davis Diseases of the Throat, Nose and Ear Dr Pernet: Diseases of the Skin.

WEDNESDAY —10 A.M Dr Saunders Diseases of Children. Dr Banks Davis: Operations of the Throat Nose, and Ear 2 P.M. Medical and Surgical Clinics X Rays. Mr Pardoe Operations.

THURSDAY —2 P.M., Medical and Surgical Clinics X Rays. Mr Gray: Operations. Mr B Harman: Diseases of the Eye.

FRIDAY —10 A.M., Dr Simson Gynæcological Operations. 2 P.M. Medical and Surgical Clinics. X Rays. Mr Baldwin Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M. Dr Saunders: Diseases of Children Dr Banks Davis Operations of the Throat, Nose, and Ear Mr B Harman: Eye Operations. 2 P.M. Medical and Surgical Clinics. X Rays Mr Pardoe: Operations.

ROYAL INSTITUTE OF PUBLIC HEALTH Lecture Hall of the Institute 37 Russell-square, W C. 1.

Course of Lectures and Discussions on Public Health Problems under War and After-war Conditions —

WEDNESDAY —4 P.M., Lecture II.—Dr C Porter Citizenship and Health Questions in War Time. Followed by a discussion.

ROYAL INSTITUTION OF GREAT BRITAIN Albemarle-street, Piccadilly W

FRIDAY —5.30 P.M Dr J D Grant The Organs of Hearing in Relation to War

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office April 19th 1917

Date	Rain-fall.	Solar Radio in Vacuo	Maximum Temp Shade	Min. Temp.	Wet Bulb.	Dry Bulb	Remarks
April 12	—	[illegible]	45	34	[illegible]	38	Cloudy
13	0·1	63	51	33	[illegible]	38	Fine
14	—	63	50	33	43	45	Cloudy
,, 15	—	[illegible]	51	35	36	39	Fine
,, 16	0·15	77	[illegible]	35	39	42	Fine
,, 17	0·12	49	[illegible]	[illegible]	31	40	Cloudy
18	0·09	70	52	[illegible]	45	45	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot undertake to return MSS not used

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ALTERATION IN THE PRICE OF "THE LANCET"

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET Commencing with the new year, the price was raised to *8d* The rates of subscription remain as revised in October

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ON

WAR SURGERY OF THE ABDOMEN

Delivered before the Medical Society of London

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LECTURE III[1]

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WOUNDS OF PARTICULAR ORGANS (*continued*)

Large Intestine

Frequency —The colon was perforated in 258 cases among 965 operations

Associated injuries —The small intestine is the organ most frequently injured with the great gut. The stomach goes with the transverse colon the spleen and kidney with the splenic flexure the liver and right kidney with the hepatic flexure. In speaking of side to-side wounds, we have given some instances of curious injuries and one may recall here a case where the left kidney and the posterior surface of the ascending colon were the only lesions found.

The injuries of the large intestine are really similar to those of the small gut. The differences that are to be noted are due to its larger size the absence of coils the absence of mesentery and to its proximity in some portion of its extent to bone

1 *The large size of the tube* leads to a preponderance of tears or perforations, but instances are met with in which the whole lumen is completely divided, and this happens both in the fixed portion and in that endowed with the mesentery This complete division is I think, due to a collapsed condition of the intestine when it may be as is well known but little bigger than the small intestine

2 *Absence of coils* —This means that multiple injuries are not common and when they occur are not so numerous as in the small intestine The multiple injuries are found at the bends In one case which may be mentioned there were six perforations—two in the ascending two in the hepatic flexure and two in the transverse colon In another case there were three wounds in the cæcum and ascending colon and two in the hepatic flexure.

3. *The absence of the mesentery* over a great part of its course means a frequent occurrence of retroperitoneal wounds These are difficult to find and are largely responsible for the heavy mortality The partially covered portion of the small intestine—namely the duodenum—has likewise a very large mortality

4 *Proximity to bone* —This leads to wounds of the cæcum the two vertical colons and the pelvic loop by spicules of bone and as has been pointed out, these injuries are apt to be overlooked because the perforations in the peritoneum are no conspicuous

Infarction —This type of injury is met with in the small intestine but I think it is rather commoner in the large The cæcum with the ileum and the descending and iliac colons have all been found in this state. Interference of the blood supply also leads apparently to an ulceration of the mucous membrane which comes on fairly quickly after receipt of the wound. Captain Dunn has collected several cases of this type of injury which he will publish in due course

Escape of contents —The large intestine is often laden but the condition of the contents renders massive escape less frequent than it would otherwise be, but take it all in all the escape from the large intestine is more frequent than that from the small especially when the cæcum and ascending colon are involved

Nature of the lesions —*Cæcum* —There have been a fair number of cæcal wounds, most of them have been small in extent and have lent themselves to suture In other cases the wounds have been so long as to necessitate an artificial anus In one case there was bruising of a transposed cæcum In a good many cases there was a large retroperitoneal [illegible] It may be here recalled that this injury was in one instance accompanied by acute dilatation of stomach

Transverse colon —All kinds of wounds are met with here, from a simple single lesion to complete division True antero-posterior wounds are not very common, and as a rule the transverse colon is struck obliquely, the bullet passing through the anterior part of the lumen. It has already been stated that such wounds are accompanied by lesions of the stomach and small intestine

The posterior surface is sometimes wounded and this may be overlooked unless it is borne in mind that such an injury is possible, for it is not obvious unless a special search is made Bleeding from the vessels supplying the bowel is fairly frequent

Vertical colons—i e , the ascending and descending colon — It is convenient to take these two portions together, as they have no mesentery Both especially the descending lie rather further from the lateral line than would appear The wound may be completely intra- or extra peritoneal, or both combined The actual lesions are perforations, slits, tears or complete divisions Perforations are most commonly met with in side-to-side wounds and complete division in antero-posterior wounds All varieties are complicated with small gut injuries Makins noticed that ascending colon wounds were more common at the base than other colon wounds, and he attributed the rarity of the descending colon wound compared with that of the ascending to the former being more often accompanied by small gut injuries owing to the fact that the small gut overlies it This partially explains the discrepancy but the ascending colon is actually wounded more often than the descending The possible explanation may be that the descending colon lies so far back that any bullet passing transversely and involving it and the small intestine would traverse a transverse plane situated so far back in the body as to involve the spine and great vessels Of course an antero-posterior wound would involve both the small and large intestine here but these are not so common as the side wounds The anterior wounds of the vertical colons are comparatively easy to find and to deal with if a suitable incision is used The extraperitoneal are very difficult, and most probably are more often missed than any other They may be small and valvular and escape notice because they lie in a mass of areolar tissue, and this difficulty is very greatly increased when this tissue is infiltrated with blood as it so often is The great danger is an infection of the areolar tissue, and to this class of infection Fraser has given the apt term "colon septicæmia." I have seen it prove fatal within 12 hours and that with an open wound

Hepatic flexure —Next to the transverse colon the hepatic flexure is the easiest of all to deal with as it lies fairly superficially Its form leads to multiple injuries

Splenic flexure —This, from its position is the hardest of all the large intestines to deal with and even with the best placed incision it is difficult properly to examine without mobilisation

Pelvic colon —This portion of the large intestine is anatomically more like the small intestine than any other part of the colon and the lesions are somewhat similar There are slits perforations or complete division and these are often complicated with multiple small gut and bladder injuries Fracture of the pelvis so often associated, increases the gravity of the case. I have been struck with the great variations in position as shown by the different situations of the wounds of the gut in different cases in which the bullet has taken a similar direction The infectivity of its contents is very great, and an insignificant wound even if got early, has proved fatal

Symptoms —The symptoms of intraperitoneal wounds are similar to those of the small intestine A great difference lies in the behaviour of the extraperitoneal wounds, all grades of infection are met with Sometimes we have cases of acute sepsis with or without gas formation which are fatal in a few hours such cases are often past help when they arrive. They are cold blanched and clammy, and the pulse running—in fact their appearance often suggests acute hæmorrhage The dangerous sepsis shown by high mortality accompanying artificial ani when formed in the vertical colons has led some operators to always make an attempt [illegible] close the wound Unfortunately the damage is often alr[illegible] done when the case has come under treatment. In other cases especially in antero posterior wounds or cases with a single wound in the loin the symptoms are less acute Some such cases arriving late and left may do well at first, then the usual signs of intoxication and local tenderness appear In such cases an incision opening up the wound causes an amelioration , a certain number of such cases appear not to be cases of colon infection but due to infected material carried in with the projectile

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[1] Lectures I and II were [illegible] in THE LANCET April [illegible] and [illegible] [illegible]

Prognosis —Figures seem to show that there is no great difference between the small gut and the large gut in the operated series of cases, though one must remember that in unoperated cases the small intestine is much more fatal, and one can say that small gut injuries are largely fatal from hæmorrhage and shock, while the great gut injuries are fatal from sepsis, especially retroperitoneal sepsis This difference, of course, is due to the greater toxicity in the large intestine, which is known to all It is possible that operative treatment may cause the death in a certain number of colon wounds which might have got well under the old conditions, but with the increased use of a transverse incision for the exploration of such wounds the dangers ought to be greatly reduced

It is interesting to compare two series of figures In 310 cases of penetrating wounds of the abdomen under operative treatment at the front the small gut mortality was 63 8, that of the great gut 60

Makins's figures, which refer to cases at the base in the pre operative days, show the mortality to have been as follows Large gut mortality 38 7, small gut mortality 86 per cent One must remember here, of course, that there was a great elimination of both classes of case

Very few cases, apparently, of transverse colon wounds used formerly to reach the base, and this was attributed to its position favouring the spread of sepsis, but I am inclined to think that it was not so much this as to its frequent association with small gut injuries The reason for the vertical colon cases reaching the base seems to have been an anatomical one, for those colons are tucked away at the side of the body and their situation is very favourable for sealing off a local infective area

I have not been able to trace, so far, any great disparity as regards danger in the different portions of the large intestine

Treatment —In spite of the fact that some colon cases did arrive at the base and recover, I do not think that there are any surgeons who have had experience at operating who would advise abstention on this ground except in cases which arrive late

Incision —It may still be necessary to use a paramedian incision for a general exploration of the abdomen for the exclusion of, or for dealing with, other injuries The transverse and pelvic colons are best dealt with from such an incision, as these lesions are commonly associated with those of the small gut It may be necessary in certain cases to supplement this median incision with one towards the side of the body When the projectile has traversed only one side of the body the horizontal loin incision is by far the best, and here again the value of an X ray examination in cases of single entry wounds is to be insisted on. The rectus sheath may be preferred by some for exploration of the hepatic and splenic flexures, but the association of kidney injuries with these wounds makes a horizontal incision more desirable, as the kidney can be dealt with in the posterior extremity of the wound, whereas an attempt to remove the kidney through the anterior incision is not very convenient or desirable Open wounds involving the loin, and possibly involving the colons, can be dealt with by local enlargement, but in the absence of X rays a median incision to exclude other injuries is most probably desirable

- *The local lesion* —The question of treatment is determined by the nature of the lesion Suture should be attempted whenever possible, but a colostomy is often necessary to save time when other lesions have already been dealt with If suture is employed in the uncovered parts of the colon adequate drainage must be established.

Proximal colostomy —I thought when starting work that proximal colostomies would have a much wider application than I have found to be the case They are, of course, useful in limiting the amount of septic absorption in cases of large wounds of the vertical colons, but, as has been pointed out, this tissue is already infected at the time the case has come under treatment , and, in addition, one does not feel inclined to make an extra opening in the bowel and proximal colostomy to be of any use must be complete and must probably find its best application in these cases of loin wounds on the left side in which sepsis develops late, and in some wounds of the rectum A cæcostomy is a perfectly useless procedure

Rectal Wounds

These may be either extra or intra peritoneal or both.

(*a*) The extraperitoneal ones are often accompanied by wounds of the buttock and fractures of the sacrum The latter are especially dangerous, as sepsis spreads rapidly in the retro-rectal areolar tissue The treatment is a free external opening and possibly a proximal colostomy

(*b*) Intraperitoneal wounds are best treated by suture In those cases where this is impossible it may be worth while closing the bottom of Douglas's pouch above the lesion and introduce a tube through the anus into the space thus shut off The question of a proximal colostomy must also be considered

Liver

Frequency —Out of 965 cases the liver was wounded 163 times Liver wounds furnish a large proportion of the cases in which no operation was performed

Organs wounded with it —The stomach, colon, small intestine, and right kidney are those usually wounded with the liver The pleuræ are often involved The liver is often found wounded in cases of an exploratory cœliotomy where the entrance wound is far away Many cases where the liver is obviously wounded are only submitted to operation to exclude the wounds of other organs

Nature of injuries —A good-many cases of rupture by horse kicks have been seen, but most of the wounds are caused by projectiles or by ribs driven in by the missile Makins says that transverse wounds were the most common at the base The wounds are of all types a simple perforation, an avulsion of fragments especially of the anterior edge, to an almost complete disruption

The wounds are usually commensurate to the size of the projectile thus bullets, small shell and bomb fragments make perforations or scores , larger shell fragments more ragged wounds Its friable nature, as would be supposed, lends itself to tearing and fragmentation , thus there may be radiating fissures from a central hole crater like exits or pieces nearly or completely torn off In some cases a bullet produces extensive destruction These are said to be caused by short-range wounds, but of this I am not convinced The track or torn surface is at first ragged and bloody , seen after 12 or 24 hours it becomes a dirty yellow brown, and later it may be a vivid yellow colour due to bilious staining The injury, to judge from the microscopic sections, is usually limited to the vicinity of the wound, and in those cases where destruction of cells is found at some distance from the wound it is most probably due to an infarction phenomenon Anyhow these infarcted areas are by no means uncommon

Hæmorrhage varies , it is not altogether commensurate to the size of the injury and its amount largely depends on whether a big vein has been opened or not—if not bleeding usually ceases spontaneously in from six to ten hours The gall bladder, common and cystic ducts have all been wounded, but the larger bile passages do not seem to be so often wounded as one might expect Sometimes in the abdomino-thoracic wounds the bile escapes into the pleura.

Symptoms —The symptoms are often slight and one has no doubt in deciding that the right course is the "expectant" one Sometimes the symptoms seem surprisingly severe and I can recall two cases of tangential wounds of the liver which could not have involved the liver deeply and in which there was no sign of blood in the abdomen Both cases were extremely shocked and one ended fatally, unfortunately there was no post-mortem There are the usual signs of abdominal injury, the main ones being those of hæmorrhage which manifested itself in the usual way

Jaundice —Jaundice of a slight and evanescent character, accompanied by bile in the urine in some cases, is seen in the early stages , it is of no great importance and usually passes off , its cause is not known The septic form of jaundice which is seen at the base in a considerable number of cases, and which not infrequently ends fatally, is also seen at the front within three or four days of the receipt of the wound There has also been one case of severe biliary peritonitis which ended fatally 36 hours after receipt of the wound There was much bile in the peritoneum, and no other injury to account for the peritonitis. Of course it is impossible to deny that infection may have been carried in with the projectile I quote this case because there is considerable difference of opinion as to whether bile can cause peritonitis In the pleura, apparently, it is often quite innocuous

For the late facts of liver wounds I cannot do better than refer you to Sir George Makins's paper on this subject which appeared in the *British Journal of Surgery* (No. 12, iii., 1916).

Prognosis.—This may be said to be good. Thus we have 114 cases and 38 deaths. Shock and hæmorrhage are the common causes of death. In uninfected wounds mortality has a distinct relation to the amount of injury, both on account of the amount of blood lost and of the amount of injured substance. No connexion has been traced between the direction of the projectile and the fatality. Injuries of the big bile passages do not seem to increase the gravity to any appreciable extent. Attention has already been drawn to the grave symptoms of apparently trivial injuries.

Treatment.—Many cases require no operation, as there are obviously no other organs wounded. Many cases are operated on because of the possibility of injury to other organs and the bleeding in the liver wound found to have ceased.

The incision for an obvious liver wound is either an "f" shaped rectus incision or a sub-costal. A French surgery recently brought out recommends an incision parallel to the costal margin which passes through the costal cartilages. Access to the dome of the liver is said to be greatly facilitated by this method. The actual treatment of the wound when found consists in leaving it alone, packing it, or suturing. The latter is not very satisfactory. The big bile-passages can be dealt with on ordinary lines by suture and drainage.

Pancreas.

Frequency.—Very few of such injuries come under review—so few as to suggest that most of them are rapidly fatal. The association of the gland with the big vessels need hardly be mentioned.

Symptoms.—There are no distinctive symptoms, the lesion being found at explorations and accompanied by fat necrosis. The wasting so often seen in civil injuries and the formation of Jordan Lloyd's cysts have not been seen.

Prognosis.—One case was sent to the base in which the pancreas was obviously perforated by a bullet, the other cases were fatal. Makins has published some cases of wounds of this organ which he had seen at the base. He says that they were discovered during the performance of operations for intestinal injuries and that the typical results of the escape of the pancreatic juice have been observed. They have usually proved fatal. He mentions one interesting case in which an abscess formed and opened, in which the patient eventually recovered and was discharged to England. This man walked six miles after receiving his wound and suffered no abdominal pain. He had been retained some time at the casualty clearing station on the suspicion of an injury to the alimentary canal.

Spleen.

Frequency.—Wounded 54 times in 955 abdominal operations.

Associated injuries.—The kidney is most frequently injured with this organ, the splenic flexure is fairly frequently associated with it. The curious absence of combined stomach and spleen wounds has already been noticed. The thorax is often involved, though usually only at its inferior limit.

Nature of injuries.—These consist of perforations, tears, slits, avulsion of the upper and lower poles, and complete disruption. It is often injured by broken ribs, and rupture through an intact diaphragm has been described, the wound being produced in one case by a piece of hard clay.

Symptoms.—These are mainly those of hæmorrhage, and the diagnosis is made on these and on the position of the wound. Very often it is only found wounded in the course of an exploratory operation. There is nothing special about the hæmorrhage, and the damming up of blood in the left loin which has been said to be a feature of this injury in civil practice has not been conspicuous in the present campaign. The amount of hæmorrhage varies very much and depends mainly upon whether the vessels are injured. Unless this is the case the hæmorrhage has usually ceased when the abdomen is opened.

Prognosis.—This is good unless the other organs are involved or the main vessels of the organ torn. Experience at the base obtained by post-mortems on cases fatal from other reasons has shown the healing of many spleen injuries. The loss of the organ does not seem to cause any great shock. There must be many cases of soldiers in the army without their spleen who offer a good opportunity for examining the result on the blood produced by loss of this organ. I should be much obliged if any of those who come across such cases could let me have the result of the blood examination.

Treatment.—In uncomplicated wounds a subcostal or a rectus sheath incision with a transverse extension is most suitable. The kidney is very likely to be wounded, and has been removed in several cases with the spleen. If the hæmorrhage has ceased, the organ is best left alone; the suturing or packing will control the hæmorrhage if this is going on. As a matter of fact, sutured holes are apt to bleed almost as much as a raw surface unless the hæmorrhage is fairly free. Excision should only be resorted to if the organ is totally disrupted or the vessels torn.

One point has to be borne in mind in operating on those cases, especially if associated with wounds of the kidney vessels. The hæmorrhage, which very likely has been controlled or diminished by the clotting, is likely to restart in an alarming manner directly the clot is disturbed. It is therefore absolutely necessary to have everything ready for the arrest of the hæmorrhage.

Mortality and causes of death.—Shock and hæmorrhage are the main causes of death. One curious case may be quoted, that of a simple perforation of the spleen that died suddenly without cause on the fifth day.

Kidney.

Frequency.—The kidney was wounded 73 times out of 965 peritoneal operations. I have seen two cases in which both kidneys were injured, both were fatal.

Associated organs.—The spleen, liver, and colon are the organs most frequently associated, and, curiously enough, the spleen and right kidney have been wounded without other injury than perforation of the vertebra, which in this case was unaccompanied by paraplegia. The case was fatal from a late recurring hæmorrhage in the spleen. The right kidney is commonly associated with injuries of the liver and hepatic flexure and the left with injuries of the splenic flexure and spleen.

Nature of lesions.—The nature of the projectile has no particular effect on the injury, and, as is the case with other solid organs, the kidney is liable to extensive rupture. The actual lesions may be perforations, scores, furrows, avulsion of poles, and hemisection; sometimes the kidney is found lying loose, the pedicle having been ruptured. Sometimes the pelvis is alone perforated; sometimes the vessels are completely divided, the ureter remaining intact. The amount of hæmorrhage depends largely upon whether a vessel has been injured or not; there is very often considerable perinephric hæmatoma. In contra-distinction to civil injuries intraperitoneal hæmorrhage is very frequent.

Symptoms.—The shock is not, as a rule, very great and depends largely on the amount of blood lost, and this perhaps is peculiar when one remembers the effect produced by the kidney blow in boxing. The dullness due to free fluid in the abdomen is more common than in civil injuries and manifests itself in the right or left side according to the organ injured. *Hæmaturia* is usually present, but it may not occur at once. The absence of this sign is due either to suppression, to the presence of clots, or to pieces of kidney in the ureter. Profuse hæmorrhage into the bladder is not common in the early stages. Hæmaturia usually clears up in a few days, but may persist. *Extravasation of urine* is not marked unless the pelvis has alone been injured.

Secondary complications.—A secondary hæmorrhage is a fairly frequent late complication and occurs apparently most frequently during the second and third week after injury. The urine is generally contaminated. Sometimes the secondary hæmorrhage starts afresh, or it may manifest itself as an exacerbation of a persistent primary hæmorrhage. Unlike primary hæmorrhage, it is often accompanied with clotting of the blood in the bladder. Gas infection of an effusion of blood round the organ has been met with.

Treatment.—Many cases require no operative treatment. Sometimes it is advisable to open up the loin wound. Many cases of kidney injury are found after an exploratory cœliotomy complicating other visceral injuries. If the kidney is found to be not much damaged all that is necessary is a puncture drained into the loin; if much damaged nephrectomy may be necessary.

As was stated in talking of splenic injuries, the hæmorrhage from wounded kidney vessels is very liable to restart with alarming rapidity directly the clots are disturbed, and it is rather interesting here to mention that the number of kidney wounds treated seems to be larger at an advanced operating centre than in the casualty clearing station This is most probably due to the fact that the cases arriving earlier have not suffered so much from hæmorrhage The treatment of secondary hæmorrhage is ablation of the organ, care being taken at the same time that the bladder is empty of clots

Mortality and causes of death —Shock and hæmorrhage are by far the most common at the front

Ureter

This is not very frequently injured, and the cases that we have had have done well There are no particular symptoms and the injuries are found during explorations Treatment follows civil lines

Bladder

My own opinion has undergone a change, and I now think that these injuries are more dangerous than I did after a few months experience at the front, and I believe that the danger is an inherent one and apart from the complications to other injured organs The bladder was wounded 45 times in 965 operated cases In 25 cases it was the only organ injured

Associated injuries —The small intestine and fractured pelvis

Nature of injuries —They may be either intra or extra peritoneal or both The intraperitoneal lesions—perforations, tears, or slits—are *very often not extensive* The extraperitoneal wounds, often accompanied by much hæmatoma, are slits or tears They are usually situated at the sides of the bladder and may be often caused by bony spicules The intra and extra peritoneal are usually caused by oblique wounds entering by the lower lateral part of the bladder and passing out through the peritoneal surface Projectiles sometimes lodge within the bladder and cause pain at a later period

Treatment —Intraperitoneal wounds are, as a rule, easily sutured, except those which occur at the very bottom of Douglas s pouch The bladder should be explored for a foreign body A suprapubic drainage is not here necessary Catheterisation for a few days may be necessary or a catheter may be tied in, although this treatment is not to be continued for long

Extraperitoneal wounds —These are treated by an incision down to the wound in the bladder, which latter may be sutured, if possible and a drain left in the space formed by the operation If the wound in the bladder cannot be sutured it is most probable that a drain down to the wound will be sufficient , if there is any doubt a tube placed in the organ is *most probably the safest course*

Colonel A Fullerton, who has had much experience of these cases at the base, does not think that a suprapubic cystostomy is necessary in extraperitoneal wounds, as he has often seen cases at the bases do well discharging urine through the various fistula tracks caused by the projectile's entrance through the buttocks or upper thigh He states, and justly, that urine is an aseptic fluid, and therefore need not be feared It is quite true that many such wounds may reach the base, but at the front one sees cases wounded extraperitoneally do badly and show signs of septic intoxication , and when one has seen such cases do badly one does not feel inclined to hold one's hand

Mortality and causes of death —Uncomplicated cases have a mortality of 56 per cent The causes of death are shock and hæmorrhage associated with fractured pelvis and, a few days later, sepsis

Protrusion of Omentum and Viscera

By this is meant, not the exposure of the abdominal contents through a large gap in the abdominal wall, but their prolapse through a wound very often comparatively small

The omentum —As would be expected, the omentum is most frequently seen in this connexion It appears in larger or smaller amounts in wounds situated all over the abdomen and also in those situated in both hypochondriac regions, where it reaches the outside of the body through the interspaces or through broken ribs where one hardly would expect to see it appear The method of extrusion is twofold it is either (1) carried out by the projectile, or (2) is driven out by the intra abdominal pressure either through the entrance or exit wounds

In one case where a shell fragment had entered above the umbilicus in the mid line and had come out in the right loin behind the lateral line of the body, the omentum was so firmly carried into the long oblique exit wound that it required considerable force to release it , it was, in fact, strangulated within the abdominal wall, though none of it showed externally

Before operation became the rule it was usual to leave these tags to slough off and probably this is still the best course to pursue if the cases are seen late If seen early it is best to treat such cases as other abdominal wounds and explore In several instances in which this had been done the intestine has been found wounded

The stomach —This has been found herniated by itself or in association with the spleen, splenic flexure, and small intestine In one case it was successfully sutured and replaced, though too much of the abdominal wall had been carried away to allow the external openings to be closed.

Liver —This organ has also been partly herniated

Small intestine —Next to the omentum the small gut is most frequently herniated , and here again, as in the case of the omentum, it may be carried out or expelled. Sometimes a knuckle lying outside has been actually wounded, in other cases the extruded knuckle has been intact, but there have been numerous lesions within the abdomen

If seen early the ordinary rules apply, and the abdomen should be opened and the lesions repaired , if seen later—over 24 hours—it is not probable that anything can be done, but still it is better perhaps to explore if the condition of the patient justifies it

Colon —The transverse colon has been herniated In one case the gut was tightly herniated in the wound and, as the injury was two days old the constriction was relieved and an artificial anus established

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ANÆSTHETICS FOR MEN WITH WOUNDS OF THE ABDOMEN,

BY CAPTAIN GEOFFREY MARSHALL R A M C

A patient with a penetrating wound of the abdomen usually shows signs of shock In a typical case the face is pale the extremities cold, the pulse rapid and the blood pressure below normal If put to bed and surrounded with hot bottles the man s general condition will improve Both surface temperature and blood pressure rise It is important *that heat-loss should be prevented during the course of* operation

The choice of anæsthetic —Men who have been wounded less than 40 hours previously are not good subjects for spinal anæsthesia Intrathecal injection of stovaine is *followed by a great* fall of blood pressure, which may be fatal. Men with wounds of the abdomen appear to be no exception to this rule. The writer's experience of spinal anæsthesia for these cases has been limited and unfortunate Three patients were each given 0 07 gm stovaine They all died within a few hours of operation Chloroform is an unsuitable anæsthetic The blood pressure falls steadily during the course of the administration If the operation is prolonged the patient may die before the abdomen is closed or during the next few hours

Ether remains the drug most generally used Good results *have been obtained with open ether Its* chief disadvantages are 1 The loss of body heat caused by the prolonged inhalation of cold vapour This is especially noticeable in the theatres of clearing stations which are commonly lodged in tents or temporary buildings *difficult to keep really* hot 2. Irritation of the respiratory tract This is most serious in winter, when many of the wounded have some bronchitis before operation Men wounded in the abdomen are particularly liable to develop bronchitis This may be due to deficient movement of the lower chest At this clearing station the proportion of cases which had bronchitis after operation was 54 per cent when open ether was used With warm ether vapour the percentage dropped to 14 7 These figures were obtained from two comparable series of cases occurring in the same months of two successive years

Ether should not be given by the intravenous method to men suffering from shock In these cases profound collapse may occur within two hours of administration

In our experience the most satisfactory way of administering *ether or chloroform* is by the Shipway apparatus[2] The patient inhales a warmed mixture of air and anæsthetic vapour Induction is quiet and rapid The absence of struggling may save much bleeding from wounded vessels Breathing is easy and noiseless There is a remarkable absence of secretion The patient recovers consciousness quickly and vomiting is rare. It is usually possible to give fluids by mouth within two hours of operation. In lengthy operations it is an advantage to pass oxygen instead of air through the ether

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[2] THE LANCET 1916, i 70

When the projectile has penetrated the chest as well as the abdomen ether should not be used It is apt to provoke fatal intrathoracic hæmorrhage In these cases we have found the most successful sequence to be a preliminary injection of hyoscine 1/100 gr, morphia 1/6 gr, and atropine 1/100 gr This is followed by a minimal amount of warm chloroform vapour and oxygen.

It is not necessary to give atropine before a warm ether vapour anæsthetic. We have not found any advantage in doing so In the majority of cases morphia should be withheld before operation, or given only in small doses A man recently injured is particularly susceptible to further shock. This susceptibility is greatly increased by large doses of morphia.

Factors causing fall of blood pressure during abdominal operations—During the course of an ether anæsthetic the blood pressure shows a tendency to rise If there is much manipulation of gut and peritoneum it will fall gradually The process however, may be continued for hours without the blood pressure falling to dangerous levels Exposure of gut outside the abdominal cavity produces a much more serious effect If more than two or three feet of gut are exposed the blood pressure will commence to fall after a few minutes It will continue falling rapidly until the gut is replaced This effect is seen when great omentum only is exposed Surgeons should be urged to make big incisions, and work as much as possible with the gut lying inside the peritoneal cavity

Apart from copious hæmorrhage, there is one other procedure which causes rapid fall of blood pressure. This is turning the patient on his side The effect is only produced if the patient has been under the anæsthetic for a considerable time before being turned At the end of an abdominal operation the patient may be in good condition He is then turned on the right or left side so that the surgeon may excise a wound in the back. In a few minutes there is a great fall of blood pressure and the radial pulse disappears It may be hours before the patient recovers this lost ground

The indication is that wounds of the back should be dealt with before laparotomy Turning the patient has no ill effect in the first half hour of an ether anæsthesia.

CAUSES OF FAILURE.

It has been sufficiently indicated that the chief causes of failure are hæmorrhage shock, and sepsis Hæmorrhage and shock are the early causes sepsis are later The latter is of two kinds (*a*) Peritonitis as the result of soiling the peritoneum with intestinal contents or that carried in by the missile, (*b*) the sepsis which occurs in colon wounds on the uncovered portion of the bowel. To these causes must be added two more

Mental and physical strain—It is commonly said that the surgeon in war has the advantage over his peace colleagues in that his subjects are healthy young adults This of course is true but still there is the strain caused by days of watching and alertness and of nights when sleep is difficult, interrupted or impossible to obtain Just before an action very likely both artillery and trench mortar bombardment increase to their maximum Then there is the exertion of battle coming on the top of days of constant strain The excitement of battle for the time being at any rate obliterates all sense of fatigue so that many men do not know how tired they are until some wound is received which prevents them going farther Then there is the journey which we have already described to the casualty clearing station Sometimes the men arrive practically asleep and resent any interference or examination Other men arrive in whom a state of excitement is still present and they are wakeful and anxious to chatter about their experiences Then after being fed they are dressed and if they do not fall asleep in the process they do so immediately afterwards, and it is one of the most striking sides of the medical side of war to see a large room filled with men lying on stretchers—some slightly wounded some severely, some mortally but all asleep and asking for nothing but sleep It [illegible] body and soul It is on such patients that the surgeon has to work and it may well be imagined how much the mental and physical strain increases the shock of the injury

Complicating injuries—One need say very little on this subject except that every kind of bodily injury may be added to that of the abdomen. Compound depressed fracture of skull fractured long bones, multiple wounds, fractured spine, and avulsed limbs are among such complicating injuries and when one considers the total mortality and in appraising the worth of abdominal surgery one must take these injuries into account, it may be said that were it not for such extraneous injuries the mortality would be considerably lower No attempt has been made in the operative table to show such injuries

THE FUTURE.

It cannot be denied that the measure of success that has been obtained in abdominal surgery and for the matter of that in other wounds is principally due to the fixity of the battle-line Can the high standard be kept up if the armies get on the move? The answer is doubtful It largely depends on whether it will prove possible to render the casualty clearing station sufficiently mobile to prevent a large gap recurring between it and the field ambulance We shall never be in the same condition as we were in Africa, as the motor ambulances have largely minimised distance, but the motors will never be able so to eliminate space as to make a casualty clearing station far back as useful as one well up

The two most importance functions of a clearing station are (1) To warm and feed men, (2) to operate upon them under reasonably favourable conditions The cook house and the theatre supply these conditions Nursing and after-care are important but it is better to operate on an abdomen and let a man lie on a stretcher than not to operate on him because beds and nurses are absent

Shall we return to the expectant treatment if the war changes its character? I am inclined to think not People have learnt that the abdomen is not such a fearful place and that good results can be obtained without the elaborate surroundings that were formerly thought necessary The peritoneum has ceased to be the bogey that it was

RESULTS

The table published with this lecture tells what has been accomplished I would only add that every attempt has made to find out what could be done by surgery for the abdominally wounded. The mortality has been reduced at the front by some 10 per cent., and many fewer cases now die at the base The period covered by these figures extends over 18 months so that a fair average has been struck. The 18 months were mostly what is euphemistically called a quiet time, but included one period of strenuous fighting It is interesting to note that the mortality over a period of 18 months is the same as that for the first six months of that time, which fact seems to show that the figures represent a true picture of what may be expected from operative treatment

The main results may be summarised as follows —

Total number of cases	1200	No operation considered advisable	73
Arrived moribund ..	250	Total operations ...	965
Total mortality excluding moribund	50%	Total operative mortality	54%
Total mortality including moribund	60%	Total hollow viscera mortality	65%
Considered with view to operation	1032	*Stomach mortality	53%
		*Small gut mortality	66%
		*Great gut mortality ..	59%

* Uncomplicated by wound of any other hollow alimentary viscus

Table of Operations

Operation.	To base.	Died	Operation.	To base.	Died
Suture of stomach ..	25	29	Proximal colostomy	4	10
Suture of stomach and other operations on intestinal tract	6	21	Cœliotomy no hollow viscus perforated ...	89	33
Resection of small gut	25	83	Cœliotomy liver wounded	76	38
Resection of small gut and other operation on intestinal trac	5	3	Kidney exploration of	25	7
Suture of small gut	49	71	Kidney excision of	6	7
Suture of small gut and other operation on intestinal tract ...	17	33	For wounded bladder	11	14
Small gut anas ...	—	7	Spleen exploration of	12	4
For small gut fistula	2	1	Spleen excision of ...	4	12
Suture of great gut ...	50	52	Miscellaneous	10	21
Great gut anas	13	35	No operation advised	69	4
For wounded rectum	3	5	No operation moribund	—	250
			Grand total	513	775

NOTE.—In the case of injury to hollow viscera there were wounds of the solid viscera which are not shown. Thus in the case of suture of stomach of 29 fatal cases 11 were complicated by wounds of the solid viscera

ABDOMINAL SURGERY AT AN "ADVANCED OPERATING CENTRE"

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CAPTAIN R A M C (T F) SURGEON YORK COUNTY HOSPITAL;
AND
W A REES, M D Lond , F R C S Eng ,
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Out of the 640 cases of severe injuries to the abdomen head, or chest, received at this advanced operating station in six months 263 of them were wounds of the abdomen Several records of abdominal work at the front have been published, but so important is this branch of surgery, and so different in many respects from abdominal work at home, that it is important that the experiences of those doing this work should be recorded

The hospital is stationed close up to the line and is thoroughly equipped for dealing with urgent surgical work The wounded are nursed by sisters with a staff of orderlies, and the permanent officers are a surgical specialist, an assistant, and an anæsthetist, constituting "a team" The time elapsing between the receiving of the wound and the admission to hospital depends on the time taken in getting the patient back to the advanced dressing station, from which he is sent direct to us It is generally longer during an attack than in times of quiet

As soon as the patients arrive they are taken to a receiving ward and placed in beds always kept ready warmed, where they are examined, the findings noted down, and the position of the wounds marked on diagram These notes are subsequently transcribed into the Special Abdominal Book issued by the Committee of the Medical History of the War, and have added to them later the notes received from the base and from the home hospitals Thus a complete history of the case is kept from the receipt of the wound until the time the man is finally discharged

The patients remain in the receiving ward until they are taken to the theatre for operation, or, in those cases where an operation is definitely contra indicated, to the wards It is an important point in a hospital at the front not to send abdominal cases into the general ward for observation, as if this is done in a rush there is a danger of these cases being overlooked, and for the same reason patients in a seemingly moribund condition are not removed from the receiving ward, so that if their condition at any time improves they can immediately be sent to the theatre

Question as to whether the Wound is Penetrating

In dealing with abdominal cases the first question to be decided is whether the wound is penetrating or non-penetrating—that is to say, whether the missile has entered the peritoneal cavity causing visceral injury, or whether it is a "contour wound" involving only the abdominal wall To help one to decide this question and in examining every patient with an abdominal wound the following points must be considered —

1 *Facies* This sign does not possess the same value as it does in abdominal conditions met with in civil practice Most of the men brought in with severe wounds wear an anxious and worried mien

2 *Pain* This is always present in wounds of the gut It is also present in retroperitoneal hæmorrhage with its consequent stripping off of the peritoneum from the tissues, it is especially severe when it takes place on the posterior surface of the abdomen, of course, pain is very much modified by the amount of morphia that has been given

3 *The pulse* is small in volume but varies greatly in frequency and may be comparatively slow In the series of 110 cases on which laparotomy was performed it was under 100 in 64 Any irregularity of the pulse is a bad sign

It is very noticeable at the front how small, owing to the contraction of the arteries, the pulse may be in limbs which have been exposed to the cold One patient who was admitted with a mere superficial wound had an almost imperceptible pulse at the wrist, whereas the pulse in more protected parts of the body (e g , dorsalis pedis) was quite good in both volume and tension The arms had been exposed outside the blanket on a cold day during the journey to the hospital

4 *Vomiting*, if present, is a sign of peritoneal irritation In cases of stomach wounds it nearly always occurs, with or without hæmorrhage Its importance is modified by the fact that a large number of those who are wounded in other parts of the body are liable to be sick

5 *Abdominal rigidity* is widespread and continuous in cases of injury to the hollow viscera It is not so marked in cases of excessive hæmorrhage and it tends to pass off in the last stages just preceding death Abdominal rigidity also occurs in wounds of the lower chest, but in these cases, if the hand is laid on the abdominal wall, the muscles will be found occasionally to relax and an incomplete respiration taken More localised rigidity is produced by a contour wound or hæmorrhage associated with it Rigidity that is due to a chest wound is found to relax if the patient's shoulders be well raised and a pillow be placed under the knees

6 *Tenderness* is perhaps the most important sign of penetration of the abdominal cavity with injury to the gut It is not usually limited to the area of the wounded gut, but is more generalised It is not so marked in cases of injury to the solid viscera

7 *Hæmorrhage* —In most penetrating wounds one gets some internal hæmorrhage, which shows itself by dullness in the flanks and hypochondrium In very rare cases hæmorrhage may be present in the peritoneal cavity without any breach of the peritoneal surface

8 *Liver dullness* —The presence or absence of liver dullness cannot be relied on It has often been noticed to be absent in cases where there has been no injury to gut, and free air in the peritoneal cavity is scarcely ever met with even in wounds of the stomach At an operation the stomach may be seen distended with gas which has not escaped though there is a penetrating wound in its wall It is interesting to note that liver dullness is often absent in moribund cases Out of a series of nine such cases seen in sequence the liver dullness was absent in seven The explanation of this probably is (*a*) that shrinkage of the liver has occurred from excessive bleeding A small contracted liver is almost invariably met with in operating on cases where there has been much bleeding into the peritoneum (*b*) That there is a paralytic distension of the gut

9 *Position of wound of entry* —It should be noted that nearly all of our cases were examples of wounds by bombs and shells, many of which necessarily burst upon the ground and just as frequently behind or beside the patient as in front of him This is probably the explanation of the fact that a considerable majority of our patients were wounded behind a line drawn from the anterior fold of the axilla to the anterior superior iliac spine In no less than 23 out of the series of laparotomies and also in several of those who were admitted in a moribund condition the missile had penetrated through the buttock, and therefore when wounds are received in this region the possibility of the foreign body having entered the abdomen must never be overlooked In wounds of the back, with damage of the structures lying beneath the peritoneum, symptoms are often produced which simulate those found in penetration of the abdomen This is exemplified by the following case —

Private B was admitted on Nov 13th with a wound to the outer side of the left erector spinæ muscle and the second lumbar vertebræ On examination of his belly it was found that he had dullness, pain and tenderness on the left side of the abdomen He was rigid, but the rigidity was confined to the left half, and it was mainly this latter fact which made us conclude there was no penetration of the abdominal cavity, but that it was a case of retroperitoneal hæmorrhage

A second case exemplifying the same association of symptoms was the following —

Private H admitted Oct 16th, 1916, complained of great pain in the right half of the abdomen, he was very tender in this region, and had some dullness over the lower abdomen The wound of entrance was on the inner side of the left gluteal fold and these signs and symptoms were produced by the missile having passed upwards and forwards into the right abdominal wall and having caused a large extra-peritoneal hæmorrhage with bleeding from the deep epigastric artery In this case so closely did the signs and symptoms simulate those of a penetrated gut that exploratory laparotomy was performed Enough importance had not been attached to the fact that the rigidity was confined to the right side of the abdomen It has been pointed out above that the rigidity is almost always general in wounds of the gut

When the wound is received higher up, at or near the costal margin, the case may be complicated by damage to the pleural cavity or liver These cases will be considered at a later period

The size of the wound of entry may be some indication of the damage received internally, and a useful working rule is this A large wound with few abdominal symptoms suggests the probability of little or no damage internally, whereas a small wound with well defined abdominal symptoms is a clear indication of a lesion of the abdominal contents In doubtful cases exploration under an anæsthetic may be

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Choice of Cases for Operation

No hard-and fast rule can be laid down in hours as to when a case passes from the operable to the inoperable stage. When cases arrive within 24 hours of being wounded so long as they are not moribund they are all operated on. If cases arrive later than 24 hours more careful discrimination is necessary If both wounds are in the region of the flanks, and the probabilities are that the lumbar colon only is opened, they may sometimes be left, and after a few days a fæcal fistula develops and they do well. We had three such cases and these all had an exit wound, so that the course of the missile was known. If they arrive with wounds involving the abdomen, loin, or buttock, with obvious penetration, and they are not moribund, it is best to operate at once, as the fact that they have survived 24 hours shows that they may not have very serious injuries If left they will almost certainly die.

The following is an analysis of the time that elapsed between the receipt of the wound and the operation, and shows how important early operation is —

1 Cases operated on between 1 to 6 hours after wounding —43. Recovered, 27 = 62 8 per cent Died, 16 = 37 2 per cent.

Eight of the fatal cases had such severe injuries that recovery was practically hopeless and they would not have survived to reach the operating theatre had they been brought in later

2. Cases operated on between 6 to 12 hours after wounding —33 Recovered 12 = 36 3 per cent Died, 21 = 63 7 per cent.

3 Cases operated on between 12 to 16 hours after wounding—18 Recovered, 3 = 16 6 per cent Died, 15 = 83 4 per cent

4 Cases operated on over 24 hours after being wounded—11. Recovered 5 = 45 4 per cent. Died, 6 = 54 6 per cent

Recoveries at 48 36, 33½, 32 and 30 hours respectively Deaths at 60, 36, 32, 30, 29, and 28 hours.

In the fourth class bowel injury was present in every case except one at 48 hours and in this case the omentum was herniated through the skin and several coils of bowel through the muscles under the skin. It is interesting to note in this connexion that peritonitis in itself does not mean a bad prognosis as it is found that where the peritoneum shows an early and marked reaction the cases often do well.

It has sometimes been suggested that operations should be postponed in order to allow shock to pass off, and we should strongly uphold this view in all other injuries except wounds involving the hollow viscera. In these cases in our experience, the shock never does pass off. The soiling of the peritoneum must tend to keep up shock. The statement, that for the most part shock never passes off is borne out by the fact that of 36 cases admitted in an almost pulseless condition only three rallied, these were all cases where the liver only was wounded and all three recovered without operation Bowel cases always steadily deteriorate by being left Another reason for immediate operation is that internal hæmorrhage may be still taking place. These remarks are chiefly based on experience of shell wounds bullet wounds being relatively uncommon here. The only delay which is justifiable is in cold weather and if the patient had been lying out for some time In these cases it is essential that he be thoroughly warmed before his operation but this should never take more than half an hour to an hour

The next difficulty in the choice of case for operation is the decision in wounds of the solid viscera—e g liver and spleen—and the decision is rendered more difficult by the fact that in many of these cases the missile has passed through the pleural cavity before entering the abdomen The track of the missile is estimated as accurately as possible and if it is probable that the liver only is wounded no operation is performed unless there are signs of excessive internal hæmorrhage. We have notes of 11 cases of wounds of the liver treated on expectant lines, of these, 7 recovered and 4 died. Five developed pus in or around the liver and 3 succumbed to this sequela. Twenty-one cases of wounds of the liver had to be opened up and in 9 some hollow viscus was found to be wounded as well From this it is clear that the majority of wounds of the liver must have an exploratory laparotomy performed. A button hole incision is utterly useless owing to the large amount of blood in the peritoneal cavity If the splenic region is involved, laparotomy is more frequently necessary as there is more likelihood of some hollow viscus being wounded. Hæmorrhage from the spleen is not usually dangerous unless the large vessels are injured

In the series of 110 laparotomies one or other kidney was found to be wounded in 14 In every case this was in association with other injuries In none of our series of 263 abdominal cases was operation necessary for the kidney condition alone, although damage to this organ was fairly frequently met with as shown by pain and hæmaturia

The complication of the passage of the missile through the pleural cavity before entering the abdomen does not contra indicate the performance of laparotomy It was present in 18 of our series of laparotomies 10 of which recovered. In the majority the solid viscera only were wounded, but in one successful case the bowel was injured as well, another bowel case died from the effects of hæmothorax. In only one case did the operation so aggravate the chest condition as greatly to contribute towards the fatal results In these cases the anæsthetic of choice is chloroform, hypodermic injection of morphia and atropine having been previously given. It is not advisable to attempt to drain the wound of the liver through the pleural cavity, as of necessity this involves infecting the pleura In all chest cases great care is taken to drain any hæmothorax that may be present as soon as it is found to have become septic. Occasionally in suitable cases we have tried sewing up the chest wound after excising its edges in order to prevent infection of the pleural cavity

To show how capricious the course of a bullet may be, the following case is cited —

Private E was admitted 60 hours after being wounded. His wound of entry was on a level with the first lumbar spine and 7 cm to the left of it, the shrapnel ball could be felt under the skin, lying on the sixth right chondro-sternal junction His general condition was good he had slight vomiting, hæmaturia, and dullness in the flanks He had no operation and made an uninterrupted recovery By a study of cross sections we made out that the fragment had passed through the perirenal fat striking the cortex of the left kidney, it then skirted the upper border of the pancreas, traversed through the lesser sac of the peritoneum and the gastro-hepatic omentum above the lesser curvature of the stomach It then pierced the liver and diaphragm, to come to rest on the sixth rib junction half an inch to the left of the right pleural reflection and immediately below the pericardium

Moribund cases —It is difficult to state the signs that are relied upon in forming an opinion that a case is hopeless The term is justified by the fact that the average duration of life in 33 moribund cases admitted here was under five hours, in spite of everything that was done to try to rally them. In most of the cases the pulse was imperceptible or almost so and in some cases where it could be felt it was irregular Many of the cases were suffering from complicating wounds of limbs or head As the general sensibility becomes more clouded tenderness and rigidity of the abdomen become less marked If a case is seen to be hopeless an operation should not be performed, as should they survive the operation death in these cases is much more painful

Another type of case in which operation should be avoided is that where the missile with or without passage through the abdominal cavity, has lodged in the vertebral column and caused lesion of the spinal cord Every case on admission is tested for paralysis of the lower extremities, even when the wound is in the mid axillary line or on the point of the shoulder In one rush of work we had seven spinal cases in two days in most of which the spinal lesion was undiagnosed before admission These spinal cases may have intense pain referred to the abdomen which might cause a mistaken diagnosis of a penetrating wound of the peritoneal cavity

Treatment

During a rush the order in which cases are sent to the theatre is of great importance Gut injuries are sent first, then the cases of suspected wounds of the solid viscera and lastly contour wounds. At these times one of us remains constantly in the receiving room as the order of cases for operation may have to be changed from time to time as this or that patient develops fresh symptoms As to the technique of the operation little need be said

SERIES OF 110 CASES OF LAPAROTOMY FOR WOUNDS OF THE ABDOMEN

“Result” col: R recovered D died. Vomiting, “Rigidity,” “Tenderness” cols: P present N not present P(h) present (hæmorrhage) P(ls), present (left side) P(rs) present (right side), NM not marked P(hy) present in hypogastrium L local

No	Result	Hrs. after Injury	Pulse	Vomiting	Position of entry wound	Rigidity	Tenderness	Injury found	Complications
1	R	4	88	—	Below and to left of umbilicus	P	P	Three rents in upper part of jejunum Bleeding from mesentery	—
2	D	4½	84	P	Right chest behind	P	P	Penetrating wound of right kidney Two holes in small intestine	Right hæmothorax
3	D	7½	100	—	Right buttock	P	P	Two holes in small intestine 14 in above cæcum Mesentery bleeding	Iliac bone smashed
4	D	3	109	P		P	P	Many holes in small intestine Three resections	Wounds of upper & lower limbs
5	D	14	80	P	Lower right chest	P	P	*Left kidney torn (nephrectomy) Spleen torn*	*Three ribs broken Old tubercle of lung*
6	R	5½	85	N	Transverse sub umbilical	P	P	Abdominal wall opened from right to left flank No injury to gut	Injuries to left forearm
7	R	7½	80	N	Below and to left of umbilicus	P	P	Ten wounds in jejunum Resection 20 in Hole in mesocolon	Fracture of left radius through and through wound
8	D	6½	72	N	Right iliac region	P	P	Wound of cæcum and transverse colon and ileum	—
9	D	14	96	P	*Left buttock*	P	P	Two holes small intestine. Hæmorrhage from intern. iliac	—
10	D	11	120	N	Left loin	P	P	Wound 3 in long 4 in below *duodeno-jejunal junction Bruising of left kidney*	*Much laceration of muscles of back*
11	D	12	88	P	Right rib margin in front	—	—	Right lobe of liver almost torn in two Much bruising of abdominal wall	—
12	R	3½	92	N	Left chest	P	P (ls)	Wound of and hæmorrhage from spleen	Penetrating wound of chest
13	D	—	112	—	Left rib margin; omentum prolapsed	P	P	Two holes in transverse colon Large rent in diaphragm through which stomach and transverse colon passed into left pleural cavity	—
14	D	22	80	—	Right rib margin omentum lacerated	P	P	Lower margin of liver smashed Three holes in small intestine	—
15	R	33½	104	P	Left buttock.	P	P	Wound of spleen and wound of small intestine	Peritonitis present
16	D	14	120	N	Right buttock	P	—	Wound of liver	Retro-peritoneal hæmorrhage
17	D	22	108	P	Right loin.	P	—	Wound of right kidney liver and diaphragm	Right chest penetrated
18	R	30	132	P	Left buttock	P	P	Wounds in cæcum and 8 or 9 holes in lower part of small intestine Resection 12 inches	Peritonitis present
19	R	48	88	N	Over left great trochanter	P (ls)	P	Muscles of abdominal wall torn through on left side omentum injured	Iliac bone fractured
20	D	15	—	P (h)	Below and to left of umbilicus	P	P	Twelve holes in small intestine One large hole in transverse colon, and two holes in stomach	Peritonitis
21	R	6	100	—	Left 12th rib behind	P	—	Left kidney penetrated Spleen torn (sewn with catgut)	Lower three ribs smashed
22	R	11	128 (vf)	P	Below and to left of umbilicus	P	P	Eight holes in jejunum (upper part) three wounds in great omentum	Wounds left thigh and right arm
23	D	11	115	—	Right buttock	NM	P	Seven holes in small intestine Appendix torn away	Wound of right leg Fractured right pelvis
24	D	17	148	NM	Right flank	NM	P	Wound in ascending colon Wound of right kidney	Retroperitoneal hæmorrhage (extensive)
25	R	6½	100	P	*Mid line below umbilicus*	P	P	*Five wounds in small intestine* one almost dividing gut Three holes in mesentery	Wound of face
26	D	7	106	P	Left buttock	P	P	One wound in small intestine Two wounds in descending colon	Wound of right calf Fractured ilium
27	R	3½	92	N	Right costal margin	P (rs)	P	Deep tear in right lobe of liver	Wound in back
28	D	3½	100	P (h)	Right chest	P	—	Penetrating wound of liver Tear 3 in long in stomach One hole in small curvature One hole in small intestine	Penetration of right chest
29	D	12½	100	P	Right buttock	P	P	Wound in small intestine	Peritonitis Wound of rt arm
30	R	6	90	—	Right epigastric	N	P	Missile passed down cutting through abdominal muscles bruising anterior wall of bladder and dividing urethra *No injury to gut*	Large pelvic hæmatoma.
31	D	6½	80	N	Left loin.	P	P	Spleen torn and bleeding removed Kidney torn and bleeding removed	—
32	R	6	92	N	Epigastrium	NM	NM	Through and through wound of right lobe of liver Much bleeding No injury to gut	—
33	R	15½	93	N	Left iliac	P	P	Hæmorrhage from mesocolon	Retroperitoneal hæmatoma.
34	D	17½	128	N	Left flank	P	P	Tear in splenic flexure Left kidney torn	Left thumb blown off Wound of scalp
35	D	6½	-	N		P	P	Four holes upper part of jejunum Two holes transverse colon.	Excessive retroperitoneal hæmorrhage.
36	D	16	98	N	Right chest.	P	P	Four holes in small gut. Tear of great omentum	Seven wounds of right leg
37	D	16	64	P	Right flank	P	P	Eight holes in small *intestine Resection Three holes* in colon Right lobe of liver torn	—
38	D	29	110	—	Right lower chest	P	P	Wound in diaphragm, liver and omentum	Right chest wound General *peritonitis*
39	D	28	—	N	Left of umbilicus	P	P	Two holes in jejunum one tear in transverse colon	—
40	D	34	112	P	Left flank	P	P	Four tears in small intestine Resection	Peritonitis present. Fractured left iliac bone
41	R	36	94	P	*Right of umbilicus*	P	P	Wound small intestine Hæmatoma in omentum	Gas gangrene in mesocolon
42	D	30	98	—	Right epigastrium	P	P	Many holes in small intestine (28 in resection) Hole *in ascending colon*	Gas gangrene in left thigh
43	D	36	106	N	Left flank	P	P	Hole in colon stomach and small intestine	Right iliac bone fractured Wound of right leg
44	D	60	124	N	Epigastrium	P	—	Tear in ascending colon	General peritonitis Bronchitis Died under stovaine *anæsthesia.*
45	R	32	100	P	Left of umbilicus	P	P	Two holes in jejunum Tear in transverse colon	*General* peritonitis present.
46	D	5	96	N	Right buttock	P	P	Three tears in small gut Two holes in rectum	Compound *fracture* of left tibia. Fracture of left iliac bone
47	R	8	106	P	Left buttock	P	—	Two holes in colon One tear in small intestine	*Left kidney lacerated*
48	D	6½	100	—	Left rib margin	P	P	Jejunum torn across Resection. Hole in transverse colon Sigmoid torn across	—
49	R	11	82	P	Left iliac region	P	P	Hole in jejunum Hæmorrhage into mesentery	Penetrated *left iliac bone*
50	R	12½	124	N	Left thigh	P	P	Several holes in cæcum Appendix inflamed	Retro peritoneal tissues opened up
51	D	6½	100	—	Right epigastric	P	—	Four inch rent in duodenum	—
52	R	5	126	—	Left iliac region	P (hy)	—	Two holes in bladder two in rectum missile leaving body through left buttock	—
53	D	6	136	N	—	P	P	Many holes in *small intestine (Resection) Many holes* in colon Colectomy Ileum implanted in sigmoid.	Left chest opened Empyema *subsequently drained*
54	R	5½	88	P	*Lt.* chest omentum & sm int. prolapsed	P	—	Four feet of small intestine cleaned and replaced Spleen lacerated and bleeding Splenectomy	Multiple wounds of leg
55	D	—	90	P	Left buttock	P	P	Much hæmorrhage into peritoneum. No lesion of gut found Wound of left kidney passing up through diaphragm to left lung	—
56	R	12½	100	—	Left epigastric.	P	—	Stellate tear in left lobe liver Much hæmorrhage Sewn up	Subsequent pneumonia
57	R	5½	96	N	Left lower chest	—	—	Hole in small intestine Lacerated wound of splenic flexure of colon Resection Omentum herniated	—
58	D	6½	108	P	—	P	P	Tear in colon Six separate holes closed Many holes in	

SERIES OF 110 CASES OF LAPAROTOMY FOR WOUNDS OF THE ABDOMEN—(*continued*)

Pulse" col (vf) very feeble (vs) very small (v so), very soft (vw) very weak (s), small

No	Result	Hrs after injury	Pulse	Vomiting	Position of entry wound	Rigidity	Tenderness	Injury found	Complications
59	D	14	118	N	Right epigastric.	P	P	One tear in small intestine Tear in diaphragm	Left pleural cavity opened. Lung collapsed
60	D	3½	100	N	Through and through flanks	P	P	Several large wounds in stomach (gastrectomy) Tear in colon Liver smashed up	—
61	R	4	88	N	Left flank.	P	P	Multiple tears in jejunum (2 ft resected) Two perforations higher up (sutured) Large tear in colon	—
62	R	7½	84	P	Right flank	P	P	Large wound of liver bleeding	Right pleural effusion (subsequently)
63	D	3	90	N		P	P	Two holes in jejunum Two holes in hepatic flexure of colon Wound of liver	Wound of right chest. Compound fracture right elbow
64	R	3	88	N	Right iliac region.	P	P	Multiple wounds small intestine (resection) Torn external iliac vein.	Compound fracture rt humerus and rt. thumb Vomited round worm
65	R	10	100	N	Right chest behind	P	P	Two tears in hepatic colon	Penetrating wound of chest
66	R	4½	80	N	Epigastrium	P	NM	Wound of liver escape of bile	—
67	R	12	88	N	Right chest	—	N	Penetrating wound of liver	—
68	D	16	80	N	Left buttock	P	P	Many holes in small intestine	Penetrating wound of chest Peritonitis
69	R	3½	88	N	Right chest	—	P	Penetrating wound of liver Much bleeding	Right chest penetrated
70	R	3½	88	P(h)	Left chest	P	P	Two large wounds of stomach Hole in diaphragm	Penetration left chest.
71	R	5	96	P(h)	Left flank	P	P	Two wounds of stomach Wound of left kidney	Urinary fistula since healed up
72	D	6½	120	N	Right chest.	P	P	Much bleeding from lacerated spleen. Splenectomy	Left chest opened up
73	D	10	50 (vs)	N	Right epigastric	P	P	Extensive laceration of liver with hæmorrhage	—
74	D	11	95	P (b)	Left flank.	P	P	Two holes in small gut Three in large gut	General peritonitis lived 10 days Died of broncho-pneumonia.
75	D	12	96	—	Right rib margin	P	P	Deep laceration of both lobes of liver	—
76	D	12½	93	N	Right flank	P	P	Transverse colon riddled Resection	—
77	D	12	92	N	Lt chest posteriorly	P	P	Laceration of spleen.	Left chest opened Wounds right arm.
78	D	2	—	N	Left and above umbilicus	P	P	Stomach torn from end to end Several tears in small gut. Splenic flexure (resection)	—
79	R	7½	80	—	Glancing wound of chest and right abdominal wound	P	P	18 in of gut prolapsed Two tears in jejunum one 1½ in long	—
80	R	3	80	N	Right flank.	—	—	Transverse colon divided three-fourths of its circumference One hole in small intestine	Fractured right ilium
81	D	9½	102	N	Right buttock.	P	P	Colon divided Several tears in small gut	
82	D	4½	80 (vso)	P	Right rib margin	P	P	Wound of liver Two wounds of stomach Multiple wounds of small intestine Kidney lacerated (nephrectomy)	—
83	R	6	84	N	Left buttock	NM	P	Three holes in sigmoid flexure	Fractured left ilium Wound right leg
84	R	5½	84	N	Left lower chest	P	—	Two holes in stomach size of florin Penetrating wound of liver	Fractured ribs left side
85	D	6	80	P	Through flanks Omentum prolapsed from each.	P	P	Large tear in stomach Large stellate wound of liver	—
86	R	4	100 (vw)	P	Right buttock	P	P	Small intestine almost divided. Much hæmorrhage	Fractured right ilium
87	D	2	80	N		P	P	Small intestine almost divided in two places Cæcum torn	Fractured right ilium Large retroperitoneal hæmorrhage
88	D	8½	104	N	Multiple	P	P	Six holes in small intestine Two holes in sigmoid	Wound of thigh. Wound of right hand
89	R	6	96	N	Left flank	NM	P	Two wounds in small intestine One hole in transverse colon One hole in omentum	—
90	R	8½	92	N	Right buttock.	P (rs.)	P (rs.)	Much retroperitoneal hæmorrhage Bladder opened on right side Peritoneal cavity punctured in two places No bowel injury	Multiple wounds of both buttocks head and right side
91	R	4	92	P	Umbilical region	N	—	Three holes in small gut	—
92	R	4	80	—	Right rib margin	P	—	Penetrating wound of liver Wound of right kidney	Large retroperitoneal hæmatoma. Wound of face hand and chest.
93	R	2	93	N	Left chest	P	—	Spleen torn and bleeding Splenectomy	Penetrating wound of left chest.
94	D	17	94	N	Left loin	P	P	Two holes in small intestine	General peritonitis Died of bronchitis tenth day
95	D	3	130	—	Left buttock	—	—	Small bowel prolapsed Multiple large holes in small intestine (resection) Sigmoid torn through	—
96	D	8	104	N	Right epigastric.	P	—	Two holes in small intestine Much bleeding from hole in mesocolon	Peritonitis present
97	D	8	93	N	Left flank	P	—	Wound 1½ in. long in splenic flexure	Wound right arm Hæmorrhage from axillary vein
98	D	11	84	P (h)	Left epigastric	P	P	Wounds anterior and posterior surfaces of stomach Wound of head of pancreas	Died fifth day
99	R	8	—	—	Left chest	P	NM	Wound of liver and spleen	Penetrating wound left chest Subsequent resection for empyema.
100	R	3	64	N	Left buttock	P	P	Hole in rectum Hole in small intestine	Penetrating wound right pelvic wall
101	D	5	81	P	Epigastric	P	P	Two holes in stomach Holes in transverse colon. Damaged left kidney	—
102	I	5	103	P	Left buttock	P	P	Six wounds as large as a shilling in small intestine. Hole in mesentery Bleeding	—
103	D	18	94	N	Left flank	N	N	Five holes in small intestine	Symptoms on admission extremely masked by morphia Wounds of left shoulder and forearm.
104	D	5	100	N	Epigastrium	NM	NM	Three holes in stomach Descending colon torn in two	Severe flesh wounds in both thighs.
105	D	6	80	N	Right buttock	P	P	Four holes in ascending colon	Fractured right ilium
106	D	9	105	N	Left loin	P	P	Two holes in stomach. Two holes in jejunum one almost complete Three holes in splenic flexure. Left kidney damaged	Multiple wounds in thighs and buttock
107	R	2	73	N	Left of umbilicus	L	L	Abdominal wall torn Omentum protruding and removed	—
108	D	5	103	N	Right buttock to left buttock	NM	P	Extensive retroperitoneal and intraperitoneal hæmorrhage No injury to gut	Sacrum smashed in two
109	D	14	[illegible] (s)	N	Right chest	I	P	Large wound in right lobe of liver	Penetrating wound in right chest. Right lung collapsed
110	D	2	[illegible]	N	Left iliac fossa	—	—	Yds of small gut prolapsed Gut torn through and lacerated in two places (two resections)	Wound of leg

A large incision is made nearly from ensiform cartilage to pubes A central opening is preferable to one through the pararectal line, even when the damage is on the flank, for one gets less bleeding in the parietes, also a better opening is produced for examination of the interior and the surgeon can commence with a less anæsthesia and before a complete relaxation of the muscles is attained If later in the operation there is any difficulty in dealing with such parts as the spleen or colic flexures, a transverse incision into the flank may be made, and it is surprising to note how well and firmly this subsequently heals

Blood is present in the peritoneal cavity in almost every case, but this may be disregarded and a routine examination made at once, first of the small intestine commencing from the cæcum, then of the large intestine commencing from the same place, followed by an overhauling of the stomach, liver, spleen, and kidneys The damage, as met with, is repaired Wounds in the intestine are sewn if possible rather than a resection done We have learned by experience that the mesentery may be separated from the gut for a distance of 2 or 3 inches without the blood supply of the bowel being impaired

Quickness and gentleness are the essentials of the treatment of abdominal injuries In sewing up, through and through salmon gut sutures are first placed in position and the peritoneum is closed with a catgut stitch In cases where the peritoneum does not come together easily, especially above the umbilicus, we bring it together with catgut passed through the peritoneum and rectal sheath The salmon gut sutures are then tied Time must not be lost in elaborate closing of the belly wall As a rule, it heals soundly and cleanly In three cases a part of the abdominal wall gaped open about the tenth day and had to be restitched, but no ill resulted, and the patients made good recovery

Saline is given intravenously on the table, if necessary, but not as a routine, as we have thought that bronchial secretion was increased by this measure

When the patient is sent back to the ward he is placed for 8 or 12 hours with the foot of the bed well raised Subsequently he is made to assume Fowler's position During the first few hours after operation every endeavour must be made to combat shock and to keep up an adequate blood pressure in the circulation To this end we employ subcutaneous or rectal saline injections, pituitary extract, and the judicious use of morphia For the same reason it is not wise to restrict for too long the giving of nourishment by the mouth

Thirst is always a distressing symptom, and frequent small drinks of water, albumin water, peptonised milk, or weak beef tea are allowed from the commencement Occasionally, due to atony, the stomach becomes over distended, and this is shown by frequent small bile-stained vomits Lavage of the stomach is then resorted to, generally with great relief to the patient

Results

The nearer the front the operating centre is situated, and the earlier the cases are brought to it, the higher will be the mortality owing to more patients arriving alive who would have succumbed if they had been transported farther back At the same time one hopes that more lives are saved Statistics of necessity must be somewhat fallacious, as the majority of patients have multiple wounds involving other parts of the body besides the abdomen.

The results of six months' work give the following figures —

Total number admitted with abdominal wounds, 263
Recovered, 136 = 51 per cent Died, 127 = 49 per cent
Total number admitted "with penetration," 180
Total number on whom a laparotomy was performed, 110
Recovered, 46 = 41 5 per cent Died, 64 = 58 5 per cent
Laparotomies performed where wounds of solid viscera only were found, 21
Recovered, 13 = 62 per cent Died, 8 = 38 per cent
Laparotomies performed for injuries to hollow viscera only, 62
Recovered, 22 = 35 5 per cent Died, 40 = 64 5 per cent

The following analysis gives the relative frequency that the different organs were wounded in our series of laparotomies Stomach 14, small intestine, 60, large bowel, 40, rectum 3, liver 24, spleen 11, kidney, 14, bladder, 3

Note —Wounds of the abdomen, though involving the viscera, that were not treated by a separate median incision are not included as "laparotomies" in the above series

We feel we owe a debt of gratitude to Surgeon General Sir Anthony Bowlby and Colonel Maynard S Smith for much encouragement and advice in our work, and to Surgeon-General Bruce Skinner for help and support given us on many occasions

THE SURGERY OF AMPUTATION STUMPS,

BASED ON THE EXPERIENCE OF 2000 CONSECUTIVE CASES[1]

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The surgery of amputations has entered a new era with the war There are various reasons for this development First, it must be remembered that in the experience of this generation modern aseptic methods meant a negligible number of amputations Then, the experience of the past generation of surgeons (who were of necessity masters of the art) is not really applicable to the present circumstances The old surgeons planned their operations essentially for speed and for use of peg limbs, and the classical operation for the foot belonged to an age when artificial joints had not been introduced Nowadays the aim of an amputation must include the ultimate fitting of the often delicate and complicated artificial limb which the modern instrument-maker produces

Primary amputations are performed to arrest infection, and so to save life Further operation, or radical treatment, is commonly necessary in England to prepare or improve the stump, so that eventually a satisfactory limb may be fitted to it The aim of this article is to elucidate this secondary treatment—that is, the preparation of stumps for artificial limbs—and is based on the experience of nearly 2000 cases which I have seen at the Pavilion Hospital, Brighton At the same time these considerations will give a basis for action in the case of the primary amputations

Classification of Cases

The cases seen at the Pavilion Hospital have been amputated two months to two years before coming under my care, and may be roughly classified as follows (1) Good stumps not ready for an artificial limb, (2) unhealed stumps from primary amputations, (3) sequestrum formation, (4) sinus, (5) bad scars and eczemas, (6) pain or tenderness, and (7) joint contractures Three months must be taken as the minimum time in which an amputation stump can become ready for fitting an artificial limb, and then only if a tight bandage has been worn and massage used daily The bandage and the massage accelerate the shrinking of the stump

Unhealed stumps are, as a rule, the result of the so called guillotine amputations An amputation of the guillotine type, or one in which the flaps have not been stitched up, should be treated with continuous skin extension from the earliest possible moment until healed or operated on again, continuous extension will almost cover a guillotine stump in a few weeks

Every infected stump, after healing is well advanced, suddenly shrinks and the skin becomes loose, when this occurs the time has come to re-fashion the stump The length of time varies with different stumps, but two to three months is a usual time for the thigh, it may be longer If this time is chosen it is sometimes possible to remove the scar and bring the skin edges together without shortening the bone It is hardly ever necessary to remove more than half to one and a half inches of bone The importance of a few inches in length of the bone cannot be over-estimated in most amputations The other advantage of waiting is the improvement in general health and the higher resistance to infection that the patient develops

I have been very much struck, in studying the medical history of the cases under my care by the large number of bad stumps the result, as far as one can judge, of operating on guillotine stumps within two months of the original amputation It would appear that the risk of infection is much greater in the early days, either because the infection is more virulent or the patient's resistance is lower or both At any rate, the very large number of cases suffering from necrosis of bone that I have to deal with at the Pavilion Hospital are almost all in stumps that have been shortened within two months of a guillotine amputation, and, further, in my own cases where I have to shorten guillotine stumps (which I now postpone until the local and general condition indicates that the time has arrived for operation), although sepsis is met with from time to time, it is never of such a nature as to cause necrosis of bone, and, except in two cases, I have not been obliged to remove more than two or three stitches for irrigation and drainage Even if necrosis of bone does not occur, severe sepsis leaves a bad irregular surface where long flaps with muscles have been used, or a large scar adherent to bone where skin flaps only have been used In both cases further operation is often necessary

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[1] Abstract of a paper read before the Brighton and Sussex Medico-Chirurgical Society

Sequestrum —No stump is ready to send to the instrument-maker until it has been radiographed, as it is quite a common thing for a stump to heal and yet contain a sequestrum, with the result that as soon as an artificial limb is worn an abscess forms and a sinus results If the sequestrum is small at least two pictures should be taken to enable the surgeon to know where it is, so that it can be removed with the least possible damage to the stump Sequestra in stumps are generally buried in new bone thrown out from the end of the shaft The amount of new bone is often very large, and I have had to remove as much as an inch of new bone before coming to the sequestrum New bone which is cancellous can be chiselled away freely, but the shaft of the bone must on no account be injured, because the inflammatory reaction following this operation is often very severe, and should the shaft be injured there is a risk of further necrosis

Sinus —Sinuses in stumps are due to (1) silk ligatures, (2) necrosis of bone (3) foreign matter, such as metal, or (4) long septic tracks in scar tissue which are unable to close from imperfect drainage and low vitality I always use a crochet-hook instead of a probe in examining a sinus, and with this very useful little instrument ligatures or small sequestra may be removed. It is not advisable to operate on a sinus with a view to removing ligatures unless repeated attempts with a crochet-hook have failed. When silk is the cause of a sinus there are often several pieces In one case 17 silk ligatures were discharged from a thigh stump in the course of three months Four or five is a more usual number, and a great deal of harm may be done to a stump by exploring for silk. Silk should never be used for ligatures in operating on amputation stumps, for it is the cause of 40 per cent. of the sinuses I treat, and causes prolonged convalescence and needless suffering

The second and third causes of sinus, necrosis and foreign material require localising by the aid of X rays, and the remarks made under sequestrum" apply

The fourth class of case, the long septic track in scar-tissue, is difficult to diagnose, and can only be proved by exploration of the sinus If nothing in the nature of a foreign body is found I place the case in this class and excise the skin round the sinus and remove the deep part of the scar and then sew up the wound Packing the wound and attempting to obtain healing from the depth often leads to a bad puckered scar, the stitches can always be removed if necessary

Pain in the stump or tenderness of the stump —Causes (1) Nerves adherent to the scar, (2) bulbous nerves, (3) sequestrum in new bone in a healed stump, (4) spurs of new bone, (5) chronic abscess Nerves adherent to the scar (the result of not shortening the nerves at the time of amputation or when shortening the stump) always have to be removed and in this connexion it is important to remember that a nerve such as the internal saphenous is as important as the great sciatic both in the thigh and in the leg As a rule removal of the nerve from the scar is the best procedure but in the case of short leg stumps I always remove the popliteal nerves at the bend of the knee and the internal saphenous in Hunter's canal, for by this means there is no fear of the new cut end receiving pressure from the bucket and so becoming tender again Should an amputation stump suppurate there is grave risk of the nerves becoming adherent and painful even if shortened Bulbous nerves not adherent to the scar as a rule become painless in about three to four months and so I do not remove them until I have waited this length of time The converse is true and bulbous nerves not tender or painful sometimes become so after three or four months and when this occurs I remove the bulb as the prognosis is bad without operation One bulbous nerve may cause extensive symptoms such as a large area of hyperæsthesia, and in one case it gave rise to epileptiform fits These occurred over a period of some months but ceased altogether after removal of the bulb

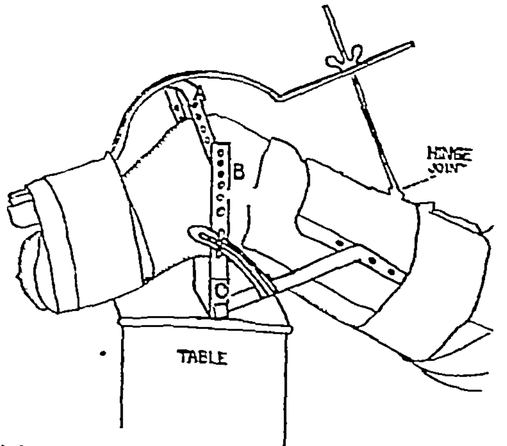
Spurs of new bone —Spurs of new bone are common, and every now and then cause pain and require removal. The large amount of new bone formation in stumps that have been infected is striking, and it often takes on fantastic shapes and follows muscular attachments and sinuses Spurs running into the adductor muscles are the most common and it is in this situation that I have sometimes had to remove them on account of pain. It is important to be sure that the pain apparently due to the spur is not caused by a bulbous nerve, as in my experience it is rare for a spur alone to cause pain

Chronic abscess —In these cases the diagnosis will generally be bulbous nerve, but instead of a nerve a small abscess will be found sometimes round a ligature and sometimes with no apparent cause.

Bad scars and eczema —There are two classes of unsatisfactory scar—one due to insufficient covering of the bone end and the other to too much covering—in stumps that have been infected. In the first group if the scar is very large and liable to ulcerate it is necessary to excise it after skin extension has been used In the second group, if the edges are very puckered and turned in the scar is liable to eczema, and in leg stumps, after wearing an artificial limb, it is apt to break down from the softening which results from the sweat decomposing In excising the scars of the second class it is important to re-fashion the deep parts as well as the skin, otherwise the condition will relapse when healing occurs

Joint contractures —In a great number of cases which I see the following conditions are found (1) Flexed knee, (2) flexed and abducted hip, (3) adducted shoulder

Flexion deformity of the knee-joint, if only of a mild degree, is cured with massage and a back splint If more severe and of several months' standing, I use a splint made for me by Major Lightfoot, of the Hove War Hospital Supply Depôt and by means of this splint most flexed knees can be straightened If this fails the posterior capsule of the joint should be divided with a tenotome Tenotomy of the ham strings alone is not likely to correct the deformity if adequate splinting has already been tried without success



Splint for straightening flexed leg stumps —Splint applied to flexed leg stump The joint at C, and the ability to alter the length of the bars C B and B A, enable the splint to be centred over the knee-joint in any case The splint was designed to be fixed in plaster-of Paris

The deformity of flexed and abducted hip is usually corrected by massage and movements, but in the event of failure tenotomy of the tensor fasciæ femoris should be done and in some cases it is necessary to divide the anterior portion of the capsule of the hip-joint. The correction is maintained by a plaster-of Paris spica. An artificial limb can never be worn satisfactorily with a flexed thigh stump

Adduction deformity of the shoulder is treated with massage and movements, if these fail an anæsthetic is given and the condition forcibly corrected, the correction being maintained for some weeks in a plaster of Paris splint

Joint contractures can, and should be prevented by daily movements of the joints likely to become contracted, aided by bandages and splints It is impossible to splint properly, or to move a stump when the nerves have been left unshortened as the pain is too great.

Considerations guiding Shortening of Amputation Stumps

In shortening stumps I only use skin flaps, and the flaps used are shorter than the flaps generally recommended in text-books Too much skin gives a bad flabby stump, which becomes ultimately badly nourished I never now use muscle in the flaps, as, rather than being an advantage, it has several disadvantages, in practice a guillotined arm stump is often better than the stumps resulting from skin and muscle flaps When shortening amputation stumps I am guided by the following considerations —

The Foot —A Syme amputation with bone section a quarter of an inch above the articular surface of the tibia and with all the bony projections rounded off, gives a stump short enough to fit an artificial ankle, and is end bearing This must be regarded as the best amputation that can be done A Pirogoff stump is too short to use as a peg and too long to fit an artificial foot to, it is an amputation of no practical value, and should never be done The stump of a Chopart, as a rule, becomes deformed, and even if it does not it cannot compare with a Syme, owing to the difficulty of fitting an artificial appliance A guillotine Chopart as a primary operation leaves the necessary material for doing a satisfactory Syme later

The Leg —Amputation in the middle third of the leg, at the lower end of the prominence of the calf, using a long anterior and short posterior flap gives the most serviceable stump below the knee with the exception of a Syme Amputations in the lower third of the leg give a weak scar liable to ulcerate in winter, and they necessitate the wearing of a clumsy and heavy artificial limb Amputation at the seat of election should not be done if greater length can be given, and never merely to improve the scar unless end bearing can be obtained for certain, in the absence of end bearing the importance of an extra inch of lateral bearing cannot be overestimated Unless two fingers can be placed side by side on the inner side of the posterior surface of a leg stump when flexed the stump is too short to use a below knee artificial leg and a kneeling leg will have to be worn When shortening a leg stump it is advisable to do a supracondylar amputation, unless this length of stump can be obtained

The Knee —Amputations through the knee must be well covered, and it is unusual for enough skin to be available, for if enough skin is available a short below-knee stump could as a rule, be obtained The patella should always be removed in amputations about the knee The best amputation about the knee is through the top of the condyles, rounding off all bony projections and if this be done an end bearing stump is made which is short enough to allow an ordinary artificial knee joint to be fitted Stokes Gritti s amputation is an unnecessary refinement unless the bone section has to be made above the cancellous part of the femur and then it should be used to make the stump end bearing

The Thigh —Every inch of the femur above the condyles is of the utmost value until the upper third is reached In this situation, unless two and a half inches of bone below the lesser trochanter can be saved a thigh bucket cannot be used Therefore it is best to amputate through the neck of the femur, when this amount of bone is not available, a less severe amputation that will be satisfactory is just through the junction of the great trochanter and shaft

The artificial leg for a hip joint amputation is a sound practical appliance and can be fitted to a subtrochanteric amputation It is not satisfactory with longer stumps or with a long fleshy stump such as the Furneaux Jordan It is important to consider this before interfering with a guillotine stump in the upper half of the thigh. I often see nice-looking stumps the result of re-amputation which are too short for a thigh bucket and bad or impossible for a hip bucket and moreover some of them are covered with muscle showing that more bone could have been saved A conical stump can no longer be regarded as necessarily bad, as they are often satisfactory

The Wrist and Forearm —One movable finger is better than any artificial appliance that can be obtained Through wrist amputations must now be regarded as satisfactory Every inch of bone from the lower end of the ulna to within three inches of the upper end of the ulna is of value, less than three inches of ulna cannot be made use of, and so, when compelled to re-amputate a forearm stump unless three inches of ulna can be left it is best to do a supracondylar amputation, removing the supracondylar ridges

The Arm —Every inch of humerus above the condyles is useful Guillotine stumps make better stumps than amputations where muscle is placed over the end of the bone Unless one and a half inches of bone below the anterior axillary fold can be saved the shoulder joint cannot be used The shoulder joint artificial arm does not press on the stump, and so it is not necessary to remove bulbous nerves from these very short stumps unless they give rise to neuralgia.

Summary

No secondary amputations should be performed in cases of guillotine amputations until all œdema has disappeared and skin extension has been employed for six weeks

Guillotine amputation stumps above the middle of the leg or middle of the thigh should never be shortened until healed unless it is decided that the knee joint or hip must be sacrificed When shortening has to be done the minimum amount of bone necessary for utilising the joint above should always be borne in mind A guillotine amputation may make a satisfactory stump in the leg and thigh and almost always does in the forearm and arm without further re amputation

Bone in a stump does not necrose unless infected. Delay in shortening stumps reduces the risk of infection, because infection is not in the wound only but in lymphatics leading from the wound The amount of matting round the vessels leading to or from an amputation stump is very striking

Silk should never be used for ligatures in operations on stumps Amputations should be done by skin flaps only and no muscle should be utilised in the flap, the pad of fibrous tissue formed over the end of the bone from the organising clot being all that is necessary All nerves, and not merely the main nerves, must be shortened at the time of the amputation or re amputation

To prevent deformity, daily exercising the joints and the employment of splints and bandages are essential measures in preparing the stump for the artificial limb

A good Syme amputation leaves the patient with little disability, and amputations through the tarsus should never be done as a secondary operation

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KORSAKOW'S PSYCHOSIS IN ASSOCIATION WITH MALARIA

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During the war a large number of patients have been seen who have lost their memory This is not infrequent among those who are suffering from the effects of shell shock In other cases the condition has undoubtedly been simulated in order that the patient may have a better chance of escaping from uncongenial service or it has been assumed to excuse some breach of discipline A few patients have come under observation in whom loss of memory was one of the signs of dementia paralytica and in several others it occurred after concussion of the brain. In the latter class of patients it is not uncommon to find that the memory of the accident or of the circumstances which lead up to it is completely lost In several of the forms of alcoholic insanity, for instance in delirium tremens and in chronic alcoholic poisoning it is common to find that the memory is defective It occurs too in some forms of senility and also after attacks of epilepsy

Among these various conditions there stands out prominently that form of loss of memory which was described originally by Korsakow as occurring in patients of alcoholic habits who showed also signs of peripheral neuritis The condition was known as the polyneuritic psychosis. Frequently, however it could not be proved that alcohol took any part in bringing about the disease and later it became established that other illnesses, such as typhoid, malaria, diabetes arsenical poisoning &c all of which are at times associated with peripheral neuritis may give rise to the particular peculiarities described by Korsakow Furthermore many cases are on record in whom neither alcohol nor peripheral neuritis appeared to have any part and it is agreed at present that, while the typical cases are met with in alcoholic patients with neuritis, similar symptoms, which are indistinguishable from them, may be met with occasionally without neuritis and without alcoholism

The essential features of the disorder are loss of memory for recent events and difficulty in concentrating the attention The mental disturbance is one mainly of confusion of thought, disorientation and forgetfulness The patient loses the power of keeping events in their chronological order, and he constantly transfers to the present experiences which belong to the distant past He lives in a state of reminiscence

The following account is that of a patient who showed this condition He was a stoker, aged about 45, and he was admitted to Haslar on Nov 6th, 1916 The few notes which he brought with him showed that he had been admitted to hospital in Bombay on Oct 15th, 1916, and later to the 15th General Hospital at Alexandria The notes stated that when he arrived at the latter place he was very anæmic and had œdema of the lower limbs as high up as the lumbar region, and that this condition had been present for six weeks The urine showed degenerated hyaline and epithelial casts, but neither albumin nor blood was detected

When he arrived at Haslar on Nov 6th there was no œdema and the urine was normal He was very weak and anæmic, but no disease was detected except some recent gouty arthritis of his left wrist Gout was also detected in the right ear and in the great toe on the left side The red cells numbered 4 650,000 and the leucocytes 10,000 per c mm Of the latter 52 per cent were polymorphonuclear cells and 46 per cent were lymphocytes He was observed from the first to be rather dull mentally

On Dec 10th his temperature went up to 104° F suddenly and malarial rings were found in his blood by Dr P Fildes The attack rapidly subsided with the administration of quinine and on Dec 14th he was transferred to the neurological department for further observation of his mental condition For the notes already given I am indebted to Surgeon T G Gibson, R N, under whose care the man had been

In his story the patient told us that he was born on June 10th 1866, that he lived at a certain address at Fulham and that he had a daughter aged 12 years He said also that he had seen his wife recently at the hospital These statements it was not easy to disprove at the time, and indeed the idea of attempting to disprove them did not occur to us then Later, however, when he told us that the year was 1899, that King Edward was reigning, and that the war was between England and some field force and had been going on for four years, it was evident that we were dealing with some serious form of amnesia

The man was well nourished, but pale, and he looked a little simple He spoke quietly and politely and said that, with the exception of the pain in his wrist he felt quite well He told us that he had suffered frequently from intermittent fever" and that his last attack was about three months ago, when his temperature was 104° He said that he was ill for a week

He told us that he was for eight years on the active list and that he then became a labourer, implying that he had become a reservist and that he had been called up for the war This was supported by the fact that he was wearing a well grown moustache which he said he had let grow for some time He said that he had not been in action He did not know the name of the hospital, and his ideas about the war were hopelessly confused, but he was able to do sums well and he read intelligently He constantly stroked his moustache and chin with his hand He did not appear to be worried particularly about his loss of memory, but he recognised that matters were not as they should be He kept to himself a good deal, but appeared to be quite happy and contented

He remembered having been at Bombay but had no recollection of his illness there or of the swelling of his legs He could not tell us anything about his voyage home or about Christmas a fortnight before He stuck to his statement that King Edward was on the throne, but he could not give the name of the Queen or of the Premier When he was at a loss for a reply he *used to say* that he did not "read the papers carefully enough for that" He knew that Lord Roberts was in command during the Boer War and said that he expected that he was still "somewhere on the frontier" but he would not hazard which frontier he referred to He knew where he had been to school, and said that he was in the sixth standard He recalled that he had been engaged to be married for about a year He knew all about the circumstances associated with the relief of Ladysmith, but he did not know the name of Sir George White even when it was mentioned in conversation He said that he was a bald man and that he knew his photograph well When he was reminded about the battle of Jutland and of the Falkland Islands he appeared to recall them, but he remembered nothing about them For instance he did not know between which peoples the battle of the Falkland Islands was fought, but he thought that "England was there He remembered that the Boer War was between England and the South Africans, but he knew nothing at all about the Jutland battle, and when pressed for some information about this battle he said that it was at sea and in the air, between England on one side and some country whose name he could not remember on the other He said further that it was a kind of bombardment, and that Lord French was in command there, just as he had been at the Falklands, "because they must have had some troops there" He remembered the Diamond Jubilee, and thought that it took place in 1887 Later on, when pressed for more information about the war, he said that it was between England and the Balkan States

On examination his gait was seen to be normal and he had no tremors The spleen was not palpable His systolic blood pressure was 140 mm Hg He had no headache and the urine and viscera were normal His weight was 9 st 13 lb There was no evidence of alcoholic excess, nor was there any reason to suspect it His blood on Jan 15th, 1917, contained 5 050,000 red cells and 10,300 leucocytes per c mm, and of the latter 63 per cent were polymorphonuclears and 34 per cent small lymphocytes The hæmoglobin content was 90 per cent

Nothing abnormal was detected in the central nervous system with this important exception he had a bilateral absence of his ankle jerks This was confirmed repeatedly at subsequent examinations The calf jerks were active There was no history of sciatica, nor was there anything else found to point to a past neuritis

The association of the mental condition with the absence of ankle-jerks clearly made it imperative to rule out dementia paralytica, in spite of the fact that he did not resemble a case of this disease The Wassermann reaction in the serum and in the cerebro spinal fluid was found to be negative by Dr Fildes, and the cerebro spinal fluid contained no cells

On Jan 20th his wife came to see him She brought her step daughter and two friends Several letters written to her at the address at Fulham which was given to us by the patient had been returned to us and finally his correct address was obtained from the Admiralty It was in Portsmouth, where he had lived for four years His wife told us that she had not seen her husband for nearly four years, when he was last on leave As far as she knew, his previous health had been good He had done 18 years' active service and had commissioned the *Pyramus* at the onset of war She thought that he was still in this ship and had been worried because she had not heard from him for some time The last letter she had received was from the Sailors' Home at Bombay during November, 1916 She had no knowledge that he was sick She said that he had been a labourer formerly and that she had been married for 21 years

The man recognised his wife and friends, but was not able to join in the conversation as readily as they wished He told them that he must have grown his moustache on his way *home* He caused considerable surprise by solemnly announcing that Lord Roberts and General Buller were in command at the battle of the Falkland Islands The following day, Jan 21st, he recollected having seen his wife, but thought that she had brought with her his little girl He was reminded that he lived at Portsmouth, but up to the last he said that he lived at Fulham and that he was going there on his discharge He was discharged to his home on Jan 22nd, 1917

The wife's story is put in here so that the reader will be in possession of the actual facts of his personal history before he reads the short list of the man's answers to various questions which is appended. It was very evident, during daily conversation with the patient, that he was living through the period of the Boer War over again His memory for past events was not perfect, but it was far better than that for events of the present time In a few instances, such as that of the intravenous injection his memory for events of the immediate past was completely in abeyance However, when his mistakes were pointed out to him he would sometimes avoid repeating them the next day In some cases, when he made correct replies to simple questions of fact, it is likely that he had been told the answers by the other patients

Jan 3rd 191 —What is the name of the King?—Edward or William
What is the name of the Prince of Wale ?—George
What year did you j in the Service?—1899
Who is head of the Army?—Lord Roberts or Lord Kitchener
When did the war start?—1890
What month is it? (January)—December
What Queen is reigning?—Queen Victoria.
Who is Prince of Wales? Prince Edward.
Where does the King live in London?—Buckingham Palace
How long have you been in hospital? (Two months)—Ten days
Who is head of the Navy?—Admiral Jellicoe

What was the name of his ship?—*King Edward.*
Who married Lord Kitchener?—No one
What is the name of Admiral Beatty's ship?—*King Edward.*
Have you been on the *Reserve List*?—Yes after doing 12 years service
When did you rejoin?—At outset of war
Where did you spend last Christmas?—Has no idea
What ship did you travel home in? (*Britannic*)—*Tyne*
Where did you spend Christmas?—At home.
Have you ever been in a decorated ward?—Yes in the present ward, but I do not know why it was decorated

On Jan 4th I asked him when he had last seen me, referring to his catechism of the 3rd He hazarded, "The day before yesterday, in the ward, at 11 A M," *but he did not know what* we talked about As a matter of fact, the interview was in Sister's cabin, and at 6 P M

On Jan 5th, at 10 A M, I gave him an intravenous injection of "914," with the idea of stopping future attacks of malaria He had never had any injections previously At 4 P M *he had no recollection whatever of the injection*, and when I asked him when he would like to commence his treatment, *he said that he would leave all that to me*

The mental characteristics of Korsakow's psychosis are clearly portrayed in this patient *It* was evident that the absence of ankle jerks and the mental confusion must be associated if it was possible to do so, and it was fairly clear that the abnormality of the reflexes was due to a peripheral neuritis, although no other sign of neuritis was present What was the cause of the neuritis? There was nothing to suggest alcoholism as the cause The only facts which we possessed were that he had gout, and that he had a proved attack of malaria while under observation There was no reason to think that his gout was the cause of the neuritis On the other hand, peripheral neuritis has been noted in malaria not infrequently, and Manson remarks in his book that loss of memory, partial or complete, appears to be a common accompaniment of peripheral neuritis of malarial origin The illness from which the man suffered in Bombay, when his lower limbs were swollen, may have been beri beri, in which neuritis is common enough, or it may have been malarial nephritis It is by no means certain, however, that nephritis existed at all We could not ascertain what this illness was, but in view of the fact that he had malaria (and probably *it was not his first attack) it seems not unreasonable* to ascribe his polyneuritis and the characteristic loss of memory to the disease described by Korsakow

THE TREATMENT OF DIABETES MELLITUS

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THE following is a brief sketch of the line of treatment which I have carried out with much success in many cases of diabetes mellitus during the last three years Recently many new methods of treatment have been published, *some* of which are of distinct service Certain of these methods have, however, disadvantages and are occasionally followed by unpleasant symptoms The line of treatment briefly sketched in this article will, I think, be found *free from risk* if carried out in the class of cases indicated (To limit the length of this article many of the details of the treatment have been omitted)

A routine examination of the patient *is* first made, complications noted, and the abnormalities of the urine determined When certain complications (affections *of* the lungs, heart and kidneys, &c) are detected a special form of treatment may be required and a rigid diabetic diet may not be desirable Such cases will not be considered in this article

When the case is one of diabetes without these complications a diabetic diet will be usually suitable But the form of the disease must first be determined When the urine gives persistently a claret colouration with perchloride of iron, and if this is not due to drugs, and if *other* indications of decided acidosis can be detected, the case requires very careful and special treatment, *these cases* will be briefly considered at the end of this article

If then no complications can be *detected* which require a special form of treatment, and if the urine should give no reaction with perchloride of iron, and no other signs of decided acidosis can be detected, the following course of treatment may then be carried out.

Course of Treatment

I The patient is first placed on Diet I —an ordinary rigid diabetic diet, but with the addition of 3 oz. of white bread *daily*

II If the glycosuria is not checked in a short time (few *days*) the white bread is promptly replaced by a pure diabetic bread (free from starch, or only containing the smallest amount thereof), such as biogene bread and ponos biscuits protein bread, &c [1]—Diet II

III If this fails after a fair trial of 10 *or* 14 *days* the following Diet III is often successful if the patient is able to rest at home *on a sofa for a short time*

For *one week* only food is taken in small quantities every 2 *hours from* 8 A M to 10 P M and the foods are eggs, milk, cream, custard, coffee, tea, and beef tea The following is the diet sheet —

8 A M Tea or coffee with one tablespoonful of cream. One egg (poached buttered or boiled)
10 A M : One glass of warm milk (10 oz)
12 noon : Custard unsweetened (containing one egg and half a pint of milk)
2 P M : One glass of warm milk (10 oz.) or cream (1 oz.) in warm beef tea (10 oz.)
4 P M.: Tea with one tablespoonful of cream; one egg (poached, buttered or boiled)
6 P M : Cream (1 oz) in 10 *oz. of warm beef tea*
8 P M : One glass of warm milk (10 oz.)
10 P M : Cream (1 oz) in warm beef tea (10 oz.)

In this diet (or in the modification following) the patient receives daily 3 or 4 eggs, 2 to 3 oz of cream, 2 pints of milk, in addition to tea and coffee and beef tea

The various small meals may be changed in order or altered *if the patient* desires *Thus*, at 2 P M cream and beef tea may be taken in place of milk, and a glass of milk *at* 6 P M *in place of cream* and *beef tea* At 8 P M one egg beaten up and added to 10 oz of warm beef tea may be taken in place of the glass of milk, or a poached egg and half a pint of beef tea if the patient prefers At 10 a glass of milk may be taken in place of cream and beef tea Also if the patient prefer an egg (poached or boiled) and a glass of milk may be taken at 12 in place of custard

This diet often checks the glycosuria in a few days or by the end of the week. If the glycosuria is not checked by *the end of the week* the diet *may* be *continued for* a few days longer, but if it then fails it should be discontinued and the patient placed back on Diet II *for* a few days. If the Diet III has failed to check the glycosuria the patient may be placed on Diet IV of casein or biogene and cream

IV Diet IV *of casein or biogene and cream*

The patient is given for seven or ten days a glass of casein or biogene and cream with water every two hours from 8 A M to 10 P M The casein preparation lait-proto No 6 will probably be the most satisfactory for the majority of patients A cup of tea or beef tea, or both, may be also taken, if the patient desires twice a day

The mixture of casein and cream and water is *prepared* as follows One tablespoonful of casein, or lait-proto No 6[2], one tablespoonful of cream, mix well in a tumbler with a spoon, then add hot water (or cold if preferred) very gradually, mixing well until the tumbler is full (The fluid may be sweetened with saccharin, or flavoured with nutmeg if desired)

In place of *one* tablespoonful of casein *two* tablespoonfuls of biogene[3] may be used if the patient does not like the taste of the casein It should be *mixed with two* tablespoonfuls of cream and the water added as just described

Many patients take the casein or biogene quite well, others find both unpalatable, and some cannot take either *Lait* proto No 6 may be taken quite well when ordinary casein or biogene cannot be taken

If we wish to avoid using diabetic breads instead of following the order just indicated the trial of Diet *II* may be omitted and if Diet I fails Diet III. may be tried at once, or if the patient likes the taste of casein or *biogene*, and can be seen daily, Diet IV may be tried before Diet III (*at once after Diet I*)

I have found Diet III (eggs, cream, milk, beef tea &c, as indicated) of very great service, it is simple *palatable* and often very successful It can be taken by nearly all patients and it is less expensive than diabetic food. *It can* be usually taken quite well by patients who cannot take casein or biogene It is very useful in the case *of diabetic* children It is often very successful both in mild cases and cases of medium severity, and sometimes in severe cases , In some cases, like all other treatment, it fails It often removes the glycosuria promptly in a few days or a week, though an ordinary rigid diabetic diet had previously failed. After taking this diet for seven or ten days often the patient may then take ordinary rigid diet for a long period without glycosuria returning, though previously on such a diet the glycosuria had continued. Probably it is not so often successful as the treatment with casein or biogene, but if it fails the latter treatment may then be tried, or a combination of the two methods may be tried Diet III. or IV should be continued for seven or ten days only They are to be regarded as methods of dietetic treatment which are usually much more successful than an ordinary rigid diabetic diet in removing the glycosuria temporarily, and the after effects probably continue longer If later the sugar returns in the urine the methods may be repeated Diet IV may be successful when Diets II and III have failed In a few severe cases with persistent diacetic acid reaction in the urine Diet III. or IV removes the diacetic acid as well as the sugar, but they are not always suitable in such cases

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[1] See article by the writer on *Diabetic Bread Substitutes* Brit Med. Jour Dec 23rd 1916

[2] Can be obtained from Casein, Ltd., Sheepstone-lane, Battersea, London, S.W

[3] Can be obtained from Messrs Callard and Co. 74 Regent-street London, W

After Diet III or IV has been tried for seven or ten days the patient is placed back on Diet II if the glycosuria continues If the glycosuria has been checked then the Diet III. or IV is gradually changed. One ponos biscuit is allowed at 8 A.M and 4 P M with the egg and tea. One or two days later bacon and green vegetables and custard are allowed at 1 in place of the meals at 12 and 2 and later Diet V and then Diet II are allowed.

Of course, the Diets III and IV will not be successful in all cases but they are always worthy of a careful trial except when the urine persistently gives a marked claret colouration with perchloride of iron In these cases caution is necessary, and sometimes Diets III and IV are not advisable.

V If all the diets already described have failed to check the glycosuria, then for a short time a diet of suitable vegetables, eggs and fatty foods may be tried (Diet V)

Breakfast Coffee (or tea) with cream , eggs (buttered poached, or boiled), or tomatoes or mushrooms , suitable diabetic bread or biscuits butter *Dinner* Bacon cooked in any way Any of the following vegetables cabbage, cauliflower, Brussels sprouts, turnips, French beans, spinach, broccoli, boiled walnuts, asparagus, vegetable marrow, tomatoes, mushrooms salad, lettuce, cucumber, watercress, celery, radishes Custard. Suitable diabetic biscuits or bread *Tea or evening meal* Tea and cream , eggs (buttered, poached, or boiled), or Welsh rarebit, cheese , or salad lettuce, cucumber, mushrooms tomatoes boiled egg and spinach, watercress , suitable diabetic bread butter

Or the following diet may be tried for a short time —

Breakfast Tea or coffee with cream , one egg and tomatoes or mushrooms or spinach , also one ponos biscuit or other similar biscuit *At 11 a m* Two tablespoonfuls of cream in half a pint of warm beef tea *Dinner (12 30 or 1)* Beef or tomato soup or one sardine and one ponos biscuit Afterwards one or more of the following vegetables Cabbage cauliflower, brussels sprouts vegetable marrow, broccoli (curly green), boiled celery asparagus, French beans, turnips, tomatoes, mushrooms boiled walnuts Brazil nuts sliced and fried in butter Custard stewed rhubarb gooseberries or cranberries with cream *Tea (4 to 5)* Tea with cream tomatoes or asparagus or celery or mushrooms, lettuce, salad cucumber, jelly, one ponos biscuit *Supper* Beef tea and cream (as at 11)

VI If these diets fail to check the glycosuria then drugs may be tried The drugs which I have found most useful are sodium salicylate aspirin and salicylate of quinine These drugs may be given along with Diet II or I or V I have been able to *demonstrate clearly*[4] the distinct effect of sodium salicylate and of aspirin in diminishing the glycosuria in certain cases of the milder forms of diabetes and also in cases of medium severity Some patients take sodium salicylate better others aspirin.

The dose of these drugs has usually to be increased to 15 gr (or more) four times a day before definite effects are obtained and a careful watch should be kept for toxic symptoms It is better to use the *natural* salicylate In certain cases salicylate of quinine gr 3 or 4 or more three or four times a day has appeared to be of distinct service, though I have not been able to clearly demonstrate this by careful hospital observations as in the case of the two drugs just named.

VII Fast days are sometimes of service. On these days the patient fasts, and takes only tea or coffee beef tea or whisky and soda several times and no other food. In the less severe cases the glycosuria ceases on these days, but it often returns in a day or two It may, however, not return for many days, and occasionally for a considerable time it is much less than before the fast days But so very often I have found the results of little permanent value. A fast day once a week is useful in some cases, but I much prefer the treatment with the two-hourly fluid diets III and IV , described in this article. I also prefer these diets to the more prolonged fasting which is being so frequently carried out

When the patient suffers from insomnia or marked neurasthenia bromide of potassium (gr 30 at night, or 30 early in the evening and 30 late at night) is suitable Overwork, mental strain and worry often increase the glycosuria, and should be avoided as much as possible

If none of these diets or treatments check the glycosuria, then we must be content if we can diminish it by the various treatments described After a time it is well to allow a small amount of white bread or milk, or both especially if the urine should give a persistent reaction with perchloride of iron

In some cases the most careful treatment fails , in others it is successful for a shorter or longer period and then fails But in some cases it is successful for many years, or even to the end of life.

If we have checked the glycosuria by diet or drugs, then Diet II may be allowed, and later Diet I. Still later more white bread is cautiously allowed, and then other starchy carbohydrates, if no glycosuria returns But it is always advisable permanently to forbid sugar and sweet foods containing sugar The urine should be watched and the diet made more rigid if glycosuria returns, and less rigid when the glycosuria ceases. In this way it is possible in some cases to keep the glycosuria in check for many years, or occasionally until the patient reaches advanced age and dies of some other disease

Treatment of Cases with Acidosis

When the urine persistently gives a deep claret colouration with perchloride of iron and other signs of acidosis are noted the outlook is unsatisfactory and very cautious treatment is desirable In spite of continued treatment such cases frequently advance to diabetic coma But sometimes by careful treatment this is checked for a long time and by treatment the perchloride of iron reaction may disappear and sometimes the sugar also, at least temporarily

The perchloride of iron reaction and other signs of acidosis may disappear in some cases when carbohydrates (3 oz. of white bread daily and three glasses of milk daily) are added to the rigid diabetic diet. In many cases after aperients the perchloride of iron reaction ceases for a short time Heavy oxide of magnesia gr 60 or more at night is a very suitable aperient or gr 30 three times a day in a little milk half an hour after meals After calomel, gr 1 three times a day and after treatment by an oatmeal diet (oatmeal porridge and milk three times a day) for two or three days the perchloride reaction may cease and also after the two hourly diet with eggs, cream, and milk, Diet III. or after the diet with casein and cream, Diet IV After these two Diets III or IV I have seen both the glycosuria and diacetic acid reaction to cease in some cases, but in many cases both diets fail

Diets III and IV are not suitable in some of the most severe cases of diabetes with persistent diacetic acid reaction in the urine In such cases I hesitate to advise them but even in a few of these cases I have obtained excellent results temporarily, especially with Diet III , and the urine has become free from both sugar and diacetic acid In many of these cases both Diets III and IV fail and they are not advisable in many of the very advanced cases If tried in these cases with persistent acidosis Diet III. is preferable to Diet IV and may be given in many of the less severe cases. When Diet III or IV is tried I often allow in addition for the first two days only a *small* amount of oatmeal porridge twice a day

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[4] See the writer's articles on the Treatment of Glycosuria and Diabetes Mellitus with Sodium Salicylate Brit Med Jour., March 30th 1901 with Aspirin, Ibid., Dec. 27th 1902 Treatment with both Drugs Med Chron., May 1906 and Practitioner July 1907

It is curious that when the sugar excretion cannot be checked by the casein treatment or by Diet III in these severe forms of diabetes with acidosis, in some cases the diacetic acid disappears from the urine, whilst in others it remains much the same In a few cases the sugar excretion is arrested by the casein treatment, but the diacetic acid *remains in the urine*

To summarise briefly, we may say that in these cases with persistent acidosis the ordinary rigid diabetic diet is not suitable A small amount of carbohydrate (3 oz of white bread daily and three glasses of milk) should be added to the rigid diet, the meat should be restricted, fatty food and green vegetables are very suitable The bowels should be kept quite regular Citrate of soda 30 gr, increased to 60 gr or more three or four times a day, and 60 gr of bicarbonate of soda at night, in soda water or milk are of service, and larger doses may be given Alcohol (whisky or brandy) is probably of service

In course of time usually cases of severe diabetes with marked and persistent acidosis which cannot be arrested gradually advance to diabetic coma Severe constipation, physical overstrain, and mental shock or anxiety are all very liable to excite coma in these cases, and hence they should *be carefully guarded against If the diacetic acid and other* signs of acidosis cease then the outlook is, of course much *more satisfactory Then the treatment and Diets I to IV* already described may be tried strictly, as in cases of diabetes without acidosis

In this sketch of the line of treatment I have carried out in the last few years, I have not referred to many methods which have been recently much discussed and recommended Also I have not given many details of treatment I have tried to indicate only and as briefly as possible the line of treatment which I have carried out myself and found most useful

The treatment of diabetes is now much more satisfactory than it was a few years ago, and if carried out carefully and continuously, except in cases with persistent acidosis and even occasionally in these cases, the results are often excellent By one of the Diets I II, III or IV, or by drug treatment, &c, the glycosuria may often be arrested, at least temporarily and having been once arrested often it can be kept in check more or less, or kept small for many years, or even in some cases permanently

NOTE ON A CASE WITH SEVERE GASTRIC CRISES TREATED BY AACHEN METHODS

BY REGINALD HAYES, L R C P M R C S ENG

IN all cases of *syphilis of the nervous system* it is eminently advisable that prolonged inunction should be tried *It is best tolerated when given* with the sulphur water internally and externally as at Aachen If scrupulous *attention be paid to* detail in the administration no ill effects can follow and it is as a rule well borne The method in every particular has now for some years been carried out in this country, where the patient has the added advantage of keeping in close touch with his usual medical attendant The following are the notes of a case kindly referred to me by Mr Richard Lake

The patient, a middle-aged man, complained that for some weeks he had suffered, after the slightest exertion, from burning pains in the shins The *condition was getting worse* and he requested me to give him a course of Aachen treatment, as similar trouble in the past had disappeared after a visit to that spa Having only recently become aware even that any attempt was being made to reproduce the Aachen routine in this country, he was sceptical as to the *feasibility of carrying* out the exact technique, but was willing to give the time necessary for a thorough trial He was well nourished Refused a Wassermann test Urine normal Knee ankle, and wrist reflexes absent Pupils presented Argyll Robertson phenomenon Motor Walked cautiously—*slight* Rombergism, otherwise normal Sensory Areas of anæsthesia existed *over trunk* and limbs There was some deficiency in motor power of bladder and rectum

History—About 20 years ago he acquired syphilis, rash marked, glands in groin small Treatment Hutchinson's pills for six months, when he was pronounced cured and resumed his normal life He had no further symptoms until the end of 1902 when he found difficulty in singing choked without any obvious cause, and was troubled with giddiness. In 1903 he tried a holiday for some months, but on his return *felt no better*, was very depressed, and became unsteady on his legs from time to time, even falling down He consulted Dr Risien Russell, who diagnosed tabes and ordered rest in bed and general massage and inunction of mercury in axilla and groins daily for a few weeks This, in addition to KI internally, was persevered with for six weeks The patient felt better, and went away to the country for three months In May, 1904, he had a series of bad gastric crises, during which he nearly died Morphia and ether injections and feeding per rectum became necessary After this he was confined a great deal to bed, and in the intervals could only be said to "crawl about He was then advised to try inunction at Aachen *Going there in January, 1905, he was* placed under the care of a physician there, who confirmed the diagnosis of tabes, and on his advice the patient was submitted to 76 rubbings Shortly afterwards he had another bad attack of gastric crises and heart failure Again he nearly died, requiring morphia and ether injections and rectal feeding He improved, but after 32 more rubbings had a further alarming crisis In July, still another crisis occurred, necessitating rectal feeding, &c, as before Subsequently he had at Aachen, in October to November, 50 *rubbings 1906, 2 visits, 60 and 50 rubbings, 1907, 1 visit* 40 rubbings, 1908 2 visits, 40 rubbings each time, 1909, 1 visit, 40 *rubbings, 1910 to 1914 inclusive, an annual visit*, 40 rubbings on each occasion In 1915, no treatment, a Wassermann test done in the winter was negative

Recently, when he consulted me, the complaint was that he felt he was going back, as shown by burning feelings in the shins *after* quite a *short* walk, and a tendency to giddiness after sitting down I advised 40 rubbings with full Aachen technique These were carried out at his own house—a plan of great advantage in cases of this type As his wife had accompanied him during his many visits to Germany there was no necessity for explanation or excuse A few weeks afterwards his discomfort had gone and he had attained his usual level of health He expressed surprise that the technique with which he had become so familiar at Aachen could be reproduced in its entirety in London

This patient paid 13 visits to Aachen and underwent 693 rubbings It was *not until 108 inunctions* had been given that definite improvement was noted and the crises ceased He was never salivated, nor did he suffer from gingivitis His weight is now normal for his height, and has increased 3 st since beginning treatment His capacity for work and play is now considerable

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Medical Societies.

ROYAL SOCIETY OF MEDICINE

SECTION OF ELECTRO THERAPEUTICS

New Method of Bullet Extraction —Heliotherapy and X Rays in the Treatment of Surgical Tuberculosis

A MEETING of this section was held on April 20th, Dr G HARRISON ORTON the President being in the chair

Dr A. E BARCLAY (Manchester) communicated through Dr R KNOX a further note on the New Method of Bullet Extraction, of which he gave a recent description—namely, by a specially designed, electrically connected pair of forceps to which a fluorescent screen was attached. Dr Barclay said it was difficult in the stress of war work, to assess the facts, but the instrument, when perfected, performed the extractions well and with but slight damage to the *tissues* But there were limitations (1) It could only be used in the direct line of the X rays, (2) it required experience and knowledge of X ray shadows to perform extractions safely and quickly, (3) the dangers due to prolonged exposures to X rays were not appreciated by many Army X ray workers who had *not* had experience of X ray therapeutics, hence such an instrument was not a safe one in their hands Dr Barclay's own experience with the apparatus had been successful He did not advocate the use of the *apparatus generally* in large military hospitals until the times were less strenuous and a proper *study could be given to it*

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[5] In my article on *Diabetes in the* "Encyclopædia Medica" I have given details respecting diet drugs mode of life &c

Mr H J GAUVAIN read a communication entitled "Heliotherapy and X rays in the Treatment of Surgical Tuberculosis" He first outlined the modern conception of surgical tuberculosis The disease was a generalised one with local manifestations requiring very varied methods of treatment The question of the "soil" of the patient was of great importance, and every endeavour should be made to improve the resistance of the patient, so that his natural defences should be strengthened and fortified, in order to put him in the best position to overcome the disease Sunlight, he said, acted in two ways (1) directly on local lesions, and (2) indirectly by inducing favourable constitutional effects and benefiting deep lesions Direct action was beneficial (1) by the bactericidal effect of ultra violet light on superficial lesions, and (2) by the inflammatory response which exposure provoked This inflammatory response must be controlled, as, if unchecked, harmful and necrotic effects would be produced Evidence was cited to show that the ultra violet light waves most nearly resembling those found in the solar spectrum were of the greatest value Shorter waves might be injurious, in any case their beneficial action was not clearly ascertained and the danger of utilising artificial sources of light producing these short-waved rays was indicated Until more was known of their action they should be filtered off by suitable methods of screening All the beneficial effects were then obtained without exposing the patient to danger Exposure should always be carefully graduated The direct action of ultra violet radiation was limited to superficial lesions owing to the very small penetrating powers these rays possessed Their penetration might be increased by rendering the skin anæmic, but even under the most favourable circumstances their penetrating power was not great The greatest value of heliotherapy was associated with its remote effects, and light treatment for this purpose had not attracted the attention desirable The remote effects, Mr Gauvain said, appeared to depend upon the ability of the skin of the exposed patient to pigment adequately This pigmentation was produced by ultra violet radiation but was also dependent upon some factor inherent in the patient and varying widely in degree Equal exposure in different patients would induce very varying degrees of pigmentation and some patients would not pigment at all In these the direct effects of light therapy were produced as easily as in pigmenting patients, but the remote effects were unobtainable Sandy and red haired patients attacked by tuberculous disease often had little pigmenting power Their skins would freckle, but would often not pigment except with great difficulty Freckling was undesirable as its formation was not associated with any improvement He had noted that failure to produce pigmentation was often associated with latent tuberculosis, even though there were no clinical signs of active tuberculous disease Subsequent development and successful treatment of a hitherto unsuspected lesion were frequently associated with acquirement of pigmenting power which synchronised with rapid improvement both general and local This observation was, therefore of great prognostic value and corresponded to a somewhat remarkable extent with observations made on the prognostic significance of the von Pirquet reaction Mr Gauvain submitted a theory that the action of sunlight on man was to some extent on parallel lines with its action on plant life In green plants, the actinic rays stimulated growth, but it was the illuminating rays which viâ the transforming medium of the chlorophyll pigment effected assimilation In man while the ultra violet rays induced pigment formation it was probable that the remote benefits produced by sun treatment might be largely ascribed to the illuminating rays acting through the medium of the pigment There was much clinical evidence to support this and he had designed experiments which it was hoped would further elucidate this important question It was well known that the long waved rays had very great penetrative power, but in the absence of pigmentation they appeared to have little influence on surgical tuberculosis The physiological properties of these rays demanded careful investigation Pigmentation had an important protective rôle Once established prolonged exposure could be tolerated Pigmented patients suffered little from excessive heat or cold The effects of light treatment on pigmented patients were discussed The author considered that insolation should be regarded as an adjuvant method of treatment which accelerated and consolidated the cure It increased the patient's power of resistance It had a very marked tonic and pyschological effect It speeded up metabolic activity Oxygenation was increased but the respiration rate diminished, though the amplitude of individual respirations was greater There was increased elimination which was of value in the discharge of toxic products The effect on the blood stream was profound and increased formation of red cells, increasing hæmoglobin and leucocytosis had all been noted On even the deepest lesions marked improvement had been recorded Sinuses frequently dried up where other methods of healing failed Sequestra were often painlessly extruded The resulting cicatrices were often almost invisible and keloidal scars almost unknown Fibrous tissue generally when not needed was absorbed, and this property was of a special value in restoring mobility to healed joint lesions long fixed by fibrous ankylosis Viewed as a whole, patients did much better in the summer when exposed to sun treatment than in the winter In the after care of patients occasional courses of insolation should be prescribed Heliotherapy was undoubtedly of great benefit in consolidating a cure and reducing the danger of a relapse Heliotherapy in surgical tuberculosis was, in the speaker's opinion, contra indicated (*a*) for the remote effects in patients who have no pigmenting power, (*b*) in amyloid disease, (*c*) in certain acutely septic cases until improvement by other means has been first effected The indications for X ray treatment in surgical tuberculosis were next considered The importance of careful technique and selection of suitable cases was emphasised Iselin's table of tolerance was always observed The author summarised his observations as follows (1) X ray treatment was of great help in certain local conditions and synchronous with their amelioration general improvement is often maintained, (2) its value and applicability varied in different regions of the body, (3) it was useful in certain cases of sinus formation and in the treatment of many tuberculous ulcers, leaving supple, non keloidal scars, (4) it was especially valuable in certain cases of tuberculous adenitis, but the greatest benefit might usually be only anticipated if associated with other methods of treatment, and it was particularly useful where there was much periglandular infiltration and here formed a useful treatment preliminary to extirpation or aspiration, aspiration together with the use of modifying fluids to be preferred to extirpation, when possible, (5) it was most safely applied in tuberculosis occurring in the neck, elbow joint, and knee joint, (6) it was apparently helpful in certain cases of caseous abscess formation, (7) it was both unnecessary and undesirable in the treatment of abscesses which can be easily aspirated, and should not be used with abscesses which leak from an aspiration puncture which has resulted from faulty technique, (8) it was dangerous in abdominal tuberculosis and apparently of little value in costal tuberculosis, (9) possible untoward effects as the result of careless technique or too frequent exposure should always be borne in mind and guarded against, and (10) while of great assistance in the treatment of specific lesions other aids to treatment were often required and should be associated The paper was illustrated by numerous lantern slides and autochromes, one of the latter demonstrating the extrusion of sequestra during insolation

A discussion followed.

BRITISH SCIENCE GUILD —The eleventh annual meeting will be held at the Mansion House on Monday next, April 30th, at 4 P M, when Lord Sydenham will give an address on National Reconstruction

TAVISTOCK (DEVON) URBAN COUNCIL AND "MEDICAL ETIQUETTE"—At the last meeting of the Tavistock Urban Council a letter was read from the Local Government Board in reference to the free distribution of disinfectants The medical officer of health said he was afraid that no disinfectants would be forthcoming for the poor residents of Tavistock, because the medical officer of health was required to have a note from the medical attendant stating that a disinfectant was required and the medical men in the town "did not and would not, give these notes', he added that he doubted whether any other urban district demanded these notes A member remarked that it was some imaginary question of medical etiquette and he proposed that the council inform the medical practitioners of Tavistock that these notes should be adopted and this course of action was decided upon

Reviews and Notices of Books.

Military Surgery By DUNLAP PEARCE PENHALLOW, S B, M D Harvard, Chief Surgeon, American Women's War Hospital, Paignton, England, *Captain, Medical Corps*, Massachusetts National Guard, &c With an Introduction by Sir ALFRED KEOGH K C B, Director General, Army Medical Service With original drawings by the Author London Henry Frowde and Hodder and Stoughton 1916 Pp 432 Price 15s net

THE advent of the war has introduced many a surgeon, hitherto accustomed only to the injuries encountered in civil practice, to conditions almost unknown to him, not only in degree but in kind The variety and severity of the lesions produced in the present conflict have never been equalled in previous wars Fresh problems have presented themselves, at the solution of which hundreds of surgeons are working, many of them under difficulties inherent to war conditions, and there is little surprising in the fact that they have not all come to the same conclusions Unanimity under such conditions would not be a sign of healthy progress

We therefore owe a debt to those surgeons who, possessing a wide experience of the surgery of war, give the results of their labours to the world Dr Penhallow's position as chief surgeon to the American Women's Hospital in this country has given him ample opportunities of forming considered opinions, and in the volume before us he has recorded his conclusions regarding the best methods of treating wounds met with in the present war

The work is fully illustrated with drawings, photographs, and skiagrams, and the descriptions of treatment are sufficiently detailed to enable those with but little experience to follow them The varieties of projectiles are described, the infection of wounds is discussed in one chapter, gunshot wounds of soft parts are dealt with, and in other chapters the treatment of wounds of special structures, such as bones, joints, nerves, and blood vessels, such conditions as shell shock, gas poisoning, and trench foot also are considered

The importance of his views is much increased by the impression which the reader gains from Dr Penhallow's book of an extensive acquaintance with the writings of others in this domain of surgery, and of familiarity with the literature of the surgery of the wars of the past And this is well since on nearly every page matters arise in which there is room for discussion, and it will hardly be until the war is over, if then, that surgeons will be in a position to state with certainty what is the best practice to follow No surgeon at present sees the whole of the treatment of any long case, he may see it at an emergency clearing station or at a base hospital, or it may come under his care at a hospital in this country, but he will not see it from start to finish unless its course is brief indeed Time alone will give a clearer vision of what is the best treatment in prolonged and difficult cases

Dr Penhallow's book may be regarded as a serious contribution to this clearer vision, and it will prove of special value to the less experienced military surgeon, who will find it a trustworthy guide in carrying out his duties

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Stati Ansiosi nelle Malattie Mentali By Dr GASPARE BERGONZOLI, Superintendent of the Provincial Asylum at Pavia Voghera Via Cavour 12 Pp 186—In every epoch and from very remote times the symptom group of anxiety and grief has been noticed in various organic and psychical maladies, particularly in those where, by its frequency and importance, it presents itself in a striking fashion The author, therefore, in this monograph draws attention to those forms of psychosis where anxiety occupies the principal part in the clinical picture of the disease so as to constitute a special variety, or other forms in which it constitutes an important symptom yet without changing materially the physiognomy of the psychosis After a brief historical review, the author describes a typical condition of "pantophobia" accompanied by symptoms of organic disturbance, of sensation, the circulatory and respiratory systems, &c, and then sketches phenomena of anxiety in organic diseases and psychoneurosis The bulk of the work, however consists in a careful, and elaborate description of "anxiety psychosis" in its various aspects and conditions of depression and obsession, followed by a chapter in which nine cases are portrayed with full clinical details The etiology and pathology of the condition are then discussed, and a separate chapter is devoted to its diagnosis, prognosis, and treatment, the author having obtained the best results from the administration of opium In an extensive bibliography of 358 items we only notice the names of Arnold, G Beard, Crichton, Robertson, S T Rucker, and Arthur Townsend among British and American observers, but the monograph is very complete and may be considered to be the last word on anxiety neurosis at the hands of our distinguished Italian colleague

Text book of Meat Hygiene By RICHARD EDELMANN, Ph D Third revised edition and authorised translation revised for America by JOHN R MOHLER, A M, V M D, and ADOLPH EICHHORN, D V S With 161 illustrations and five coloured plates London J and A Churchill 1916 Pp 462 Price 21s net —This third English edition of a well known work has been revised in several important directions Previously abundant references to German conditions, especially on the subject of the disposition of diseased animals, have now been replaced by exclusive reference to the rules and regulations governing the meat inspection of the United States Bureau of Animal Industry Further, since the publication of the second edition, reviewed in our columns of March 29th, 1913, alterations have been made in the regulations made by the United States, and the new régime forms an important portion of the subject-matter of this edition The new orders refer chiefly to the disposition of carcasses and to the recent measures of control adopted over the importation of meat The advanced attitude of a country like the United States in the important matter of meat hygiene is well worth studying, and apart from the practical chapters, which are of direct interest to the meat inspector, this book may safely be taken to represent modern views upon the whole subject.

Elementary Qualitative Analysis By BENTON DALES, Ph D, and OSCAR LEONARD BARNEBEY, Ph.D New York John Wiley and Sons, Inc, London Chapman and Hall, Ltd 1916 Pp 205 Price 5s 6d net —Laboratory guides in qualitative analysis are fairly numerous, and it is only occasionally that an author is found to introduce any novel features This work presents, however, a few important departures which may justify its appearance The introductory chapters on the principles underlying qualitative analysis give a clear account of chemical changes, precipitation, the evolution of gases, and the like interpreted in the light of modern knowledge Dissociation into ions, reversible reactions, and the laws of equilibrium are discussed in a clear manner Coming to the group system, a new scheme is given for the detection of acids which facilitates this process, and the authors prefer to discover the acids first, as then, rightly enough, "the procedure for the bases can usually be abbreviated" The book reveals an experience of qualitative testing, coupled with a systematic presentation of facts, which should help to put the student in right paths

Text book of Elementary Chemistry By F MOLLWO PERKIN, Ph D, F I C, F C S, and ELEANOR M JAGGERS. London Constable and Co, Limited 1916 Pp 384 Price 3s 6d net —Chemistry in its applications to some of life's affairs is illustrated in simple terms in this book Only familiar things such as the air, water, chalk, sulphur, and certain metals are dealt with, but at the end of the story there appears a chapter on technical processes, illustrating the chemical principles underlying the manufacture of well known commercial products, as the aniline dyes, soap, glycerine, oils, and so forth It is doubtful whether the section on vegetable oils and animal fats will be clearly understood by the general reader when he has to face such terms as "monobasic" "glycerides" and "hydroxyls" There is a curious slip on p 166, where the authors state that "water is temporarily hard when boiling will not alter its hardness" On p 158 the student is asked to blow gently into a flask in which the loss of carbonic acid gas, by evolution from a carbonate, is being determined, it would clearly be more accurate to withdraw the residual carbonic acid gas by sucking it out, since the breath would deposit moisture, and so to an extent disturb the calculation The educational aim of the book is praiseworthy

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INDICATIONS

BURNS
NEURALGIA
PHLEBITIS
CHILBLAINS
SCIATICA
RHEUMATISM
VARICOSE ULCERS
NEURITIS
GOUT, &c

The *British Medical Journal* Sept. 2nd 1916.
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LANCET Dec. 19th 1903 p 1812 "... The above case is one out of a number of successful results obtained from the use of this remedy (Cryogenine) contrasted with Pyramidon which certain writers regard as the best drug for phthisical temperature I think there can be little doubt Cryogenine is the safer and more efficacious antipyretic. "

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THE LANCET.

LONDON SATURDAY APRIL 28 1917

The Calling Up of Medical Men of Military Age

THE attacks made by German submarines upon our hospital ships have determined the Government to take a step which as a matter of course must have been present to their minds for some time. It has been decided to call up every medical man of military age, and every practitioner in this category will become available for the Army by May 6th. The fact that the Germans had attacked relentlessly our hospital ships during the past fortnight was announced by Mr. BONAR LAW in the House of Commons last week, before the official statement, tragedies of the kind to which he alluded had received public announcement, and in the interval others have occurred with a sad loss of medical personnel. The torpedoing of the hospital ships made clear the necessity of establishing a large number of new hospitals over seas, so that the provision abroad of the suitable hospital personnel should enable the number of wounded returned home to be sensibly decreased. Accordingly, Lord DERBY has issued a letter from the War Office to the medical practitioners of the country explaining the situation clearly, and indicating that the extensive withdrawal from their practices in the country of medical men of military age must be answered by all who remain with offers to act in a general scheme of substitution, whereby the gaps in the home medical service may be filled as completely as is feasible.

The decision of the Government to call up medical men of military age will not come as any surprise to our readers who have been kept aware of the direction which events were taking. It has for some time been obvious that the demands of the War Office, which must be taken to be identical with those of the Army, for more medical officers could only with difficulty be met under any voluntary system. Under that system the country has received, and is receiving, the devoted assistance of thousands of medical men who have neither given heed to their *financial* present or their professional future, nor to the personal dangers of the medical soldier, as revealed in the ever growing lists of our dead and wounded colleagues. The Central Medical War Committee, the Scottish Medical Service Emergency Committee, and the Committee of Reference of the English Royal Colleges have all worked unceasingly to supply the War Office with medical officers, while watching over the interests of the civilian community at home, on whose maintained good health so much of our efficient conduct of the war necessarily depends. A large number of Local Medical War Committees have coöperated with the central bodies in recommending which of the practitioners in their localities should be taken and which should be left and their opinions often given in difficult and delicate situations, have, on occasion, been carefully revised by the central bodies, no pains being spared to balance the *pros* and *cons* and elicit the deciding factor in every instance. The deliberations of the Central Medical War Committee have been strengthened throughout by intimate relations with the Local Government Board and the National Insurance Commission so that individual exemptions of medical men by the statutory tribunal have been considered both on their own merits and in respect of any public claims. The result of all this hard and careful work, carried on from day to day over a period of 20 months, had begun to suggest that the voluntary reply of the medical profession had been given in entirety, and that further demands upon the practitioners of the country to take commissions would have to be based upon a scheme of general calling up of all those of military age, combined, it might well be, with modifications in the employment of medical officers whereby economy of material would be ensured. Just when affairs had reached this position came the unspeakable onslaughts by the German submarines upon the Red Cross ships, and the decision of the War Cabinet to call up at once under the Military Service Acts all medical men of military age followed immediately. Lord DERBY's circular letter, which we print elsewhere, conveys the information to the medical profession in complimentary terms.

The onus of responsibility is now removed from all medical men of military age, they are called up however, as a class and not as indistinctive citizens, and recent events have confirmed their central professional war committees in the resolve only to continue selecting doctors for military service if they are allowed to retain the decision how many and which individuals can be spared from civil work. To medical men above military age voluntary discretion remains, but in Lord DERBY's letter the hope is expressed "that every doctor over military age will immediately offer his services to the Local Medical War Committee of his area as willing to undertake any substitution work within his capacity which would help to release any man of military age who cannot otherwise be spared." Acceptance of this invitation will be easy for some men and extremely difficult for others, the considerations ranging themselves under such headings as age, health, locality, and equipment, and requiring no further analysis to make their force apparent to medical readers. We trust earnestly, and we believe, that those whom the call to substituted service finds in positions where response has less difficulty, will coöperate quickly with the Local Medical War Committees as to the effective utilisation of their services. It is said of all voluntary systems that the willing men are those who make the greatest sacrifices, and with this our profession, which has borne so much during the war, must not be reproached. There is need for promptitude in the giving in of names at the local centres, for the organisation of the measures possible for maintaining essential medical services, while meeting the demands of the Army, cannot be of a simple nature. Every hour will probably be of value.

The Surgery of the Abdomen
The Lessons of War

IN civil practice the surgery of the abdomen is of recent growth. It is well to remind ourselves of the time, not many decades ago, and therefore still within the memory of a large proportion of medical men in this country, when even the most experienced surgeon hesitated to open the abdominal cavity Reference to text books of surgery of 30 years ago will show that the surgeon then felt justified in washing and replacing a piece of bowel or other viscus protruding through an abdominal wound, or in tying the pedicle of a prolapsed spleen, but he did not venture to open the abdomen to examine the injury caused by accident or bullet A generation has changed all that The well founded respect of the surgeon for the peritoneum has given place to the conviction that however great the risk he runs of setting up a septic peritonitis in opening the abdominal cavity, the risk is as nothing compared with the danger of leaving untouched a perforated viscus The danger of infection from without is, under these circumstances, quite overshadowed by the danger of deflement from within, and the only course open to him is to explore the abdominal cavity and to close the wound in the viscus in order to limit the spread of the peritonitis which may already have started If this is true in civil practice it applies doubly to wounds in war, where the abdominal injuries are far more numerous and usually more severe The Lettsomian lectures on War Surgery of the Abdomen delivered by Colonel CUTHBERT WALLACE, consulting surgeon to the Army Medical Service, the concluding lecture of which appears in our present issue, and the analysis of abdominal surgery at a clearing station by Captain GERALD S HUGHES, R A M C, and Captain W A REES, R A.M C, record experience in dealing with the peritoneum resulting from many months' work in France The value of these papers to the surgeon rests on the fact that the opinions expressed are based on large experience and reasoned analysis of results

Under war conditions the precise nature of the fighting materially affects the methods of surgical treatment Success in the treatment of abdominal wounds depends principally on the ability to operate before much time has elapsed after infliction of the injury This condition is only granted when the hospital is within a short distance of the fighting line Such proximity has been possible during the fighting in France ever since the rapid retreat and the advance of the first two months were succeeded by a fighting front remaining practically fixed, with the result that casualty clearing stations become as well suited for abdominal operations as any base hospital Rushes of work there have been from time to time, and these are now occurring in several places on our front, but the pressure has in general not been such as to prevent the surgeon at the clearing station from performing abdominal section in all desirable cases When advance becomes more rapid conditions will change clearing stations will not be so close to the firing line, a longer time will elapse before the patients reach the hospital, while the pressure of work will diminish the time which can be devoted to each case We may be sure that the utmost will be done to remedy these drawbacks, but clearly the statistics of a casualty clearing station in a fixed position and not overworked must compare favourably with another which is always on the move and almost overwhelmed with the number of urgent cases The results obtained at the base hospital will vary, but in a different way the base hospital receives those cases which have survived the shock of the injury and after elimination of all the more severe cases, for these will be already dead

A perusal of the papers referred to leads to certain provisional conclusions In the first place, it is clear that all abdominal cases, unless obviously moribund, should receive operative treatment, and this at the earliest possible moment after injury, provided that extreme shock is not present Performance of abdominal section during severe shock can only serve to impair the little chance of life remaining to a wounded man Within half an hour warmth usually removes much of the shock in all but the most severe cases, and the abdominal section can then be undertaken Secondly, the operation itself must be performed with the utmost despatch, and the abdominal contents not brought out of the wound more than absolutely necessary Large incisions are therefore indicated The less the bowel is manipulated the better, but examination for perforations must be thorough, omitting no part of the abdominal contents where a wound is likely to be present The recorded experience shows further that abdominal sections can be done when many of the arrangements provided in a civilian hospital are absent It will, we think, still be possible, therefore, in the future, when the casualty clearing station is constantly on the move, for the abdomen to be opened whenever there is a clear hope of saving life by rapid operation In this connexion the use of motor ambulances has helped by shortening greatly the time intervening between the infliction of the wound and the arrival of the patient in hospital We have good reason to be proud of the abdominal surgery done in the casualty clearing stations, and feel assured that the work will be equally well done under the altering conditions

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THE Medical Research Committee understand that, owing to unavoidable delay at the printing offices, copies of the report upon soldiers returned as cases of "Disordered Action of the Heart" (D A H) or "Valvular Disease of the Heart" (V D H) have not been readily obtainable from H.M Stationery Office Copies are now, however, obtainable through any bookseller from H M Stationery Office, Kingsway, W C 2, at the price of 1*s*

THE ADMISSION OF DEAF CANDIDATES TO THE C M B EXAMINATION —At a recent meeting of the Central Midwives Board a letter was considered from the lady superintendent of the Plaistow Maternity Charity inquiring whether a woman who was quite deaf, but was capable of understanding conversation by means of lip reading, was eligible for admission to the Board's examination The Board directed that the lady superintendent of the Plaistow Maternity Charity be informed that the woman about whom she inquired could not be admitted to the examination

Annotations.

"Ne quid nimis."

THE NATIONAL FOOD-SUPPLY

ACCORDING to the report of the Food Committee of the Royal Society, the consumption of bread in pre war times by the population of the United Kingdom was 5¼ lb per head per week The Devonport allowance of 4 lb represents a reduction of nearly 25 per cent upon our previous habit The reduction of 1–1¼ lb of bread per head per week asked for by Lord Devonport should make no excessive demand upon the national self control. We must, however, remember that physiology teaches that a further reduction in the national bread consumption will be dangerous, and the Government must strain every nerve to ensure that the bread supply, *including all cereals*, is kept up to three fourths of its pre war value The voluntary ration of bread and meat officially recommended to the nation by the Ministry of Food Control has now stood the test of ten weeks' trial, and the possibilities of the Devonport figures are generally recognised If these figures—4 lb bread and 2½ lb of meat per head per week—are taken to represent distribution figures for the whole mixed population of men, women, and children, workers and non workers counting alike as heads of the population, no apprehension need be felt as to keeping up the man power of the nation, but to limit the worker to the 4 lb bread ration must imperil his value. The German experience proves that some time may elapse before this happens, but the risk is one that should be avoided Bread, by which all cereals as food is implied, is the worker's food which nothing can replace The economy of bread is necessary by worker and non worker alike in so far as our customary waste of bread must cease It is imperative on all the sedentary classes in this country to get as far below the bread ration of the Ministry of Food Control as possible, for in this way the expiration of time at which the worker can return to the full bread ration will be assisted The consumption of other cereals than wheat by those who can dispense with them is no true national economy It should be, and probably is the intention of the Government to make some statement on this vitally important matter to the public as soon as an accurate forecast can be arrived at as to the amount of cereals we have in hand The country would also like to learn the views of the Royal Society, expressed through their Food Committee, for an authoritative statement would be very useful Lord Devonport's statement in the House of Lords on Wednesday is satisfactory as indicating that the term of privation which should *now* begin will not last until the period of danger for our manhood efficiency

KORSAKOW'S SYNDROME

IN another column we publish a communication by Dr Hildred Carlill, attached as neurologist to the Royal Naval Hospital at Haslar, on a case of Korsakow's psychosis in association with malaria, which draws attention to a curious and not yet fully understood condition Mental symptoms associated with peripheral neuritis were often recorded by clinical investigators, notably by Dr Allen Starr, of New York before Korsakow, in 1887, described a syndrome subsequently called by his name on the suggestion of the late Professor Jolly, of Berlin Korsakow's own title for it was "cerebropathia psychica toxæmica"—a cumbersome and not very informative term. It indicated, however, the toxic nature of the condition, which, as first described, was supposed to be characteristic of disturbance of the central nervous system of alcoholic origin, linked, in fact, to an actual and obvious peripheral neuritis Hence it has been regarded by some as the expression, clinically, of a "central neuritis," and this, pathologically speaking, is probably not incorrect Many cases have since been reported of Korsakow's syndrome apart from alcohol, and, indeed, apart from any evidence of polyneuritis Oppenheim in one case could find no other cause for the symptoms than a continued use of pyramidon. Further, in not a few cases of alcoholism the mental picture is not comparable in any way to that of Korsakow's "polyneuritic psychosis." Dr Carlill mentions its occurrence in typhoid fever, diabetes, arsenical poisoning, and malaria, almost any toxic or toxi infective state may be supposed, in the presence of certain at present unknown factors, to bring it on As the type of psychosis is, as a rule, peculiarly definite and clear cut, its appearance in the course of widely differing toxæmias is one of the most interesting features of the condition. The megalomania of dementia paralytica is not more precise than the amnesia, paramnesia, and confabulation of Korsakow's symptom complex. In the foreground of the clinical picture is the patient's Unmerkfähigkeit—his incapacity for retaining recent impressions His retention of memories of recent events is incredibly fleeting in a minute or less, sometimes, they have vanished Arising in a sense from this, and no less characteristic, is the patient's confabulation or romancing, and he is often curiously euphoric or good humoured in relating his fanciful tales Hence, also, his illusions of memory and illusions of recognition—so called paramnesia He will believe that he has been out for a walk when he has never left his bed, and will proceed to describe with charming verisimilitude whom he met and what he saw during his constitutional It is obvious, further, that another feature of his mental state is suggestibility, not only does he invent himself, but he believes the most improbable stories foisted on him by the observer His judgment is badly at fault and his critical faculty in abeyance Disorientation and confusion of recent and remote events, and absurd attempts to fill memory gaps and hiatuses, are well illustrated in the case recorded by Dr Carlill It has already been observed that polyneuritis is a frequent but not an integral part of the syndrome Persistently absent Achillis jerks may well represent an old neuritis, were they the expression of a recent neuritis probably other symptoms would be present with them, but these Dr Carlill on repeated examination has failed to discover Hence, the case is of interest also in suggesting either that the mental state has outlasted the neuritis or that it has occurred separately When the clinician is faced with a well defined and circumscribed mental syndrome in the course of an essentially diffuse and unsystematised disease such as a general toxæmia he is justified in asking whether he is dealing with a specific action of the toxin on a certain part or parts of the cerebral cortex. The underlying pathological basis of general paralysis is a diffuse and irregularly massed meningo encephalitis, yet the expansive ideas of the general paralytic are *sui generis* Similarly paramnesia and confabulation form a symptom complex of sufficient definiteness to be readily recognisable, and they occur typically in the course of alcoholic invasion of the nervous system, diffused throughout as we know that invasion must be It can be no mere guess to suppose affinities between certain toxins and certain cerebral layers or groups of cells differing in physical properties, at the least we are compelled to imagine specific interactions between toxins and the chemical activities underlying the function of neuronic systems We may adopt Pick's view and regard the cortex as a mosaic anatomically and physiologically, and patiently dissect from mental symptomatology such separable groups of symptoms as, occurring in the same form and under analogous pathological influences, may lead us to assume that certain neurons are more vulnerable than others, and that their impairment expresses itself clinically always in the same fashion Disorder—perhaps associational—of these neurons gives a clinical picture as definite as that produced by disorder of any of the projection systems, which all recognise and on the definiteness of which the study of neurology is based Assent to the contention that the cerebral mechanism functions as a whole is no reason for ignoring evidence which may afford an insight into the ordered working of its component parts

A NEW ROMAN OCULIST S SEAL

RENEWED interest has recently been taken in the oculist seals of the ancient Roman specialists and we have again to record the discovery of a new signet This was found near Cologne in 1888, but was immediately lost, and only quite recently came to light again Its owner's name, which, as usual, appears four times on the stamp, was Tiberius Julius Jasonis, and the nomina suggest that the seal dates from early imperial times The text is as follows "Tib Juli Jasonis herodes' (euodes) "ad Aspritudines et Cicatrices et cœnum Diaglaucium ad Impetum Secundum in v(eteribus?) c(oti) bur ad Aspritudines et cicatrices to (tollendas) Aliso ad Impetum et quaecunque desi " The incomplete final letters suggest, perhaps, *desicco* or *desino* The first remedy, Euodes, merely means perfume and has been found upon only a few of these seals Of what its ingredients consisted we have no knowledge It occurs upon the seal found at Tranent, in Scotland, and described by Sir J Simpson in the *Monthly Journal of Medical Science* for 1851 The reading upon that relic contains the practically identical sentence, "Euodes ad cicatrices et aspritudines" Its occurrence upon these seals, usually without advising its mixture with any other collyrium, tends to show that it possessed some medicinal properties It is also so advised upon a seal found at Ratisbon Euodes is stated upon a seal, which before the war was in the Lille Museum, to be a cure for genas retortas, words that are a philological crux According to a signet found at Bourges it was to be mixed with opobalsamatum, and here again as contra aspritudines—i e , the palpebral granulations of ophthalmia The cicatrices referred to may be either those of the transparent cornea, an affection which Galen describes thus—"Cicatrix appellatur (exulceratio totas membranas dividens) ubi nigro oculi exalto ulcere membrane crassities supervenit, et color albior apparet", or they may be those of the eyelids or eye sockets, as one seal mentions genarum cicatrices, with which may be compared Ovid s expression—exspoliat que genas oculis Celsus advises various collyria according to whether the cicatrices were cavæ or crassæ For the first case he prescribed Sphaerion, whose value he says was recognised by Asclepius himself Diaglaucium is seldom mentioned upon oculist stamps, and it is uncertain what it was—probably poppy juice Impetum designates the violence of the primal attack of ophthalmia before appearance of the mucous secretion Secundum is a word like the phrase post impetum given upon many seals, it signifies the period when the first severe effects were declining The lacuna in the text for which (c)oti bur is suggested by the first editor of this seal is not easily filled up Also the meaning of the word, or part of a word, Aliso is at present obscure

A POSSIBLE DRAWBACK OF HIGH-TITRE ANTITOXIC SERUM

WHATEVER may be the exact chemical nature of antitoxin, there is no doubt that it is intimately bound to the globulin molecules of the serum which contains it The foreign protein of the antitoxic serums injected into the human patient for the treatment of tetanus and diphtheria is rapidly destroyed in the body, and the more quickly the smaller the quantity injected The attached antitoxin is probably destroyed at the same time, and the question therefore arises whether it is advisable to aim at using small quantities of serum as is done in the modern high titre brands In the *Wien klin Wochenschr* (1916, p 37), T Hamburger called attention to cases of tetanus and diphtheria which did well until the fifth or seventh day of treatment and then suddenly took a turn for the worse, ascribing the occurrence to the destruction by that time of the horse protein, and with it of the antitoxin He suggested the advisability of using a larger quantity of lower titre serum or of adding a large amount of normal horse serum at the moment of injecting Professor Spronck, director of the Pathological Institute at Utrecht (ibid , 1917, p 332), has followed up the question further, confirming Hamburger s suggestion by actual experiment Using antitetanus serum with the mouse as a test object, Spronck found that the blood serum of a goat which received 40 units contained in 40 c c of serum was more antitoxic ten days after the injection than the serum of a goat which had received twice the number of units in half the amount of excipient The goat apparently destroyed 14 c c. of horse serum, and with it the attached antitoxin, in ten days Further experiments confirmed the result Spronck concludes that the views of Hamburger are correct and that it is preferable to use low titre antitoxic serum in tetanus While there may be general agreement with this conclusion in theory, in military practice it would scarcely be feasible For prophylaxis in bulk, at the front, the small quantity—3 to 4 c.c.—of serum of moderate titre now used has great practical advantages and appears to be efficient Large doses of low titre serum, besides troublesome to give, would add to the inconvenience and pain of the wounded For therapeutic use, whether intrathecal or intravenous, the highest titre available is required A further point in connexion with the use of alien serum is of some theoretical interest When prophylactic doses are administered at weekly intervals, the antibody formation against the alien serum is much enhanced, with the result that a progressively increasing destruction of antitoxin occurs, and the protection conferred lasts a shorter and shorter time at each injection There is much still to be learned in the administration of antitoxin

SNAPPING HIP

IN the year 1859 Perrin showed the members of the Parisian Surgical Society a case in which he diagnosed recurrent dislocation of the right hip joint in a man aged 22 who had injured the joint 12 years previously This dislocation could be produced by the patient at will by forcible adduction of the right leg, and was accompanied by a loud snapping sound and a visible jerk, reduction of the dislocation took place spontaneously Thus Perrin, but other members of the society held other views A committee to investigate the matter was appointed and reported to the effect that no dislocation took place, and referred the snapping sound to a movement of muscle tissue over the great trochanter Chassaignac, one of the members of the committee, specified the tensor fasciæ latæ as the muscle here concerned, while Morel Lavallee, another of the members, specified the anterior fibres of the glutæus maximus No further instance of the condition appears to have been recorded until 1900, when Wertheim Salomonsen described two examples as "hysterical deformity of the hip with scoliosis" The patients, a man and a girl, seem to have had each a single "dislocation" of the hip and to have recovered from it suddenly with a loud snapping sound Wertheim Salomonsen diagnosed a "physiological dislocation of the hip," rejecting the view (as Perrin had done) that the condition was due to tension of fibres of the glutæus maximus pressing the great trochanter out of place In 1905 Ferraton described in detail a similar case, under the name "hanche a ressort," or "spring hip," in which the snapping was audible, visible, and palpable In 1911 Heuilly was able to collect 57 cases of snapping hip, or Perrin Ferraton's disease, from the literature It appears, however, that not all the instances of snapping hip are as straightforward as those described above Dr G Kapsenberg proposes[1] to distinguish two classes of the disease, the typical and the atypical In the typical cases the cause of the snap lies at the level of the great trochanter, 'something' slips over this bony prominence and this "something" consists, behind, of fibres of the glutæus maximus, in front, of fibres of the tensor fasciæ latæ, and in its middle part of the converging descending fibrous cristo femoral tract which forms the ilio tibial band The whole is called the "hip deltoid' by Dr Kapsenberg, and is compared to the deltoid muscle of the shoulder joint The distinction of the cristo femoral (Zur Verth) or fascio gluteal (Heuilly) tract from the ilio tibial band is described as functional rather than anatomical In some people the typical snapping of the hip can be produced at will, particularly if the glutæus maximus is kept out of action, the cristo femoral band then slipping forwards in front of the great trochanter harmlessly and without pain But in other instances the snapping is produced involuntarily, and is both disabling and painful, this state of affairs is promoted by any morbid process about the hip that either shortens the cristo femoral tract and so increases its tension, or weakens the glutæus maximus muscle, or increases the prominence of the great trochanter As for the atypical cases of snapping hip, these are rarer, and Dr Kapsenberg defines them as those in which the snap is not produced at the level of the great trochanter but somewhere else He thinks it unlikely that a subluxation of the hip joint accounts for any of the instances, and gives details of a case of his own in which the snap was produced near the anterior superior iliac spine Under local anæsthesia the tissues were dissected in this region, and with the coöperation of the patient it was proved that the snapping band of tissue was a tendinous part of the ilio psoas muscle, in all probability the so called third head of it that springs from the anterior inferior iliac spine and passes obliquely across the head of the femur to gain its insertion into the lesser trochanter The head of the femur at this point was thought to be abnormally prominent, though no definite bony outgrowth was made out, and when the patient flexed the hip the overlying tendinous part of the ilio psoas muscle slipped from it sideways and outwards with a loud and palpable snap Conversely, when the patient once more extended the flexed leg, the sharp edge of the head of the femur held up the tendinous band under increasing tension until, as a smoother part of the bone came to underlie the band, it slipped back medial wards with a violent snap and shock Dr Kapsenberg divided this band, the wound was sewn up and healed by first intention, and the patient's hip no longer could be made to snap

THE Croonian Lecture of the Royal Society will be delivered on May 3rd by Dr Thomas Lewis, the subject being "The Excitation Wave in the Heart"

THE CONTROL OF VENEREAL DISEASES

Council Schemes

THE draft scheme for the *City of Bristol* recently submitted to the Local Government Board provides for the clinical work of the venereal treatment centres to be undertaken jointly by the Bristol Royal Infirmary and the Bristol General Hospital and for the pathological work to be carried out at the laboratory of the University of Bristol under the professor of pathology

Dr F H Morison county medical officer of health, has submitted to the *Cumberland County Council* a suggested scheme for the diagnosis and treatment of venereal diseases in the county In order to obtain some idea of their prevalence Dr Morison sent a circular letter to each medical practitioner in the county asking him how many cases of venereal diseases he treated in a year He says

> A large majority were good enough to reply to my letter but several did not and so even these figures are incomplete. The figures I obtained are as follows —Number of cases of syphilis 479; gonorrhœa 637 soft chancre, 131 total 1147 It is generally agreed that in any community gonorrhœa is at least three times as prevalent as syphilis but it will be noted in the figures given for this county that there are only 68 more cases in an average year There can be no doubt that a large number of cases of gonorrhœa, and many cases of syphilis as well in poor persons go to chemists herbalists and quacks for treatment I think it is no exaggeration to say that 70 per cent of the cases of gonorrhœa go to a quack in the first place

With regard to the provision of laboratory facilities, no laboratory exists in the county where the work could be done except that in connexion with the County Health Department Dr Morison proposes, therefore to ask the Durham University College of Medicine Newcastle on Tyne to give the same facilities as have been offered to the county councils of Northumberland and Durham He hopes to arrange for beds and out-patient centres at Carlisle and Whitehaven, noting that the authorities of Workington Infirmary and of Penrith and Keswick Cottage Hospitals were unable to offer facilities In view of the desirability of having a woman doctor to treat cases in females and believing that at present there is no woman doctor in the county, he suggests the appointment of a woman on the staff of the county medical officer Dr Morison regards the cöoperation of the general practitioner as essential to the success of the scheme and suggests that representatives of all branches of the profession in the county should be asked to attend the committee meetings In his summary of expenditure he allows for the treatment of at least 500 cases of gonorrhœa per annum and fixes the total between £1800 and £2200 for the first year

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[1] Nederl Tijdschr v Geneeskunde Amsterdam 1916 ii 1849

The scheme submitted by the *County Borough of Bournemouth* for the approval of the Local Government Board contains, amongst others, the following recommendations by Dr A D Edwards the medical officer of health —

Laboratory facilities —That arrangements be made with the Hants county authority for the examination at the Winchester Laboratory of blood specimens by the Wassermann test at a charge of 5s per specimen (*It is estimated that in the first year 200 specimens will be* forwarded from the venereal clinics provided for the Bournemouth authority and 20 specimens from private *medical practitioners in* Bournemouth.) That arrangements be made with the Bournemouth borough bacteriologist for the examination of specimens with a view to the detection of the spirochæte of syphilis and the micro-organism of gonorrhœa at a charge of 3s 6d per specimen and if the number of spirochæte examinations falls below 60 during the year of 4s per spirochæte specimen (It is estimated that in the first year the clinic will require 200 examinations for gonorrhœa, and 100 for syphilis and that medical practitioners in Bournemouth will require the examination of 40 specimens for gonorrhœa and 20 for syphilis) That the *medical officer of health make arrangements for the provision* of apparatus for the collection of specimens, with circular of instructions The estimated expenditure on these recommendations is £146.

Clinics and hospital beds —That arrangements be made with the Royal Victoria and West Hants Hospital and with the Cornelia Hospital Poole for the treatment at clinics of patients from Bournemouth and for the in patient treatment of such of these cases as may require it. (A tentative estimate of the cost incurred by the treatment, except the supply of salvarsan, at the Bournemouth Voluntary Hospitals is £350 and at the Poole Voluntary Hospital £70)

Extra clinic consultations —That arrangements be made with the senior medical officer of the Bournemouth Hospital venereal clinic for attendance at consultations with medical practitioners elsewhere than at the clinic, at a charge of £1 per consultation. (During the first year ten such cases are estimated for)

The report recommends further That infants—if breast-fed, accompanied by their mothers—suffering from ophthalmia neonatorum should be admitted into the sanitary hospital, and that the medical officer of health, in addition to his other duties, should give addresses on venereal diseases to clergymen, pharmacists, and midwives

Enlightenment Campaign

A conference of citizens representing the various interests —municipal, industrial, educational, social, and religious—in the metropolitan borough of Southwark has been convened by the Mayor of Southwark at the Town hall, Walworth road, London, S E, on Friday, May 4th, at 5 P M The chairman and honorary secretaries of the National Council for Combating Venereal Diseases will outline the work of the National Council and suggest methods for an effective educational campaign

Unqualified Treatment and the Central Midwives Board

At a recent meeting of the Central Midwives Board a letter was considered from the honorary secretary of the Leicester and Leicestershire Midwives Association urging the immediate introduction of legislation for the purpose of rendering it a penal offence for any person other than a qualified medical practitioner to undertake the treatment of venereal diseases The Board decided—

That, in view of the grave national dangers arising from the neglect or the improper treatment of venereal diseases the Central Midwives Board considers that legislation should be introduced with the least possible delay for the purpose of rendering it a penal offence for any person other than a registered medical practitioner to undertake the treatment of venereal diseases and directed that this decision should be communicated to the National Council for Combating Venereal Diseases

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LITERARY INTELLIGENCE —Messrs Butterworth & Co (India), Limited announce the forthcoming publication of a monograph on 'The Treatment of Kala-azar," by Dr U Brahmachari, lecturer on medicine at Campbell Medical School

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COLLOSOL COCAINE

THE successful outcome of the experiments leading to the production of colloidal quinine, morphine, and cocaine was foreshadowed by THE LANCET, and we are now able to state that a collosol of cocaine has been prepared at the Crookes Laboratories, where the idea was conceived of obtaining the alkaloids in colloidal form isomorphic with the colloidal protein of the body A quinine collosol is also, we understand, prepared.

Samples of collosol cocaine have been submitted to Professor W J Simpson, professor of hygiene, King's College, London, Professor R Tanner Hewlett professor of bacteriology in the University of London, and to Dr John Eyre, director of the Clinical Bacteriological Departments, Guy's Hospital, whose reports on the tests made with the object of testing the toxic and anæsthetic properties of this drug are as follows —

University of London King's College, Strand W C.
March 23rd 1917

TESTS OF TOXICITY

1 per cent Collosol Cocaine	*1 per cent. Cocaine Hydrochloride.*
I Rabbit No 4 —Weight, 3270 grammes 0 26 c.c. injected intravenously No effect. (March 13th)	I Rabbit No 3 —Weight, 2070 grammes. 0 20 c.c. injected intravenously No effect (March 13th.)
II Rabbit No 4 —0·75 c.c. injected intravenously No effect (March 13th)	*II Rabbit No 3* —0·5 c.c injected intravenously No effect. (March 13th.)
III Rabbit No 4 —5 c.c. injected intravenously No effect. *(March 15th)*	III Rabbit No 3 —3 c.c. injected intravenously Immediately after injection the animal collapsed and became insensible 5 minutes later convulsive twitchings, eyes insensitive. 10 minutes recovering but weak on hind legs and eyes now sensitive 15 minutes practically recovered. (March 15th.)
IV Rabbit No 3 —3 c.c. injected intravenously No effect. (March 16th.)	IV Rabbit No 4 —5 c c. intravenously Collapsed immediately after injection, with slight twitching and died almost at once. (March 16th.)
V Rabbit No 6 —Weight, 2770 grammes 5 c.c. injected intravenously *No effect*	V Rabbit No 3.—3 c.c. injected intravenously Immediately collapsed and died. (March 19th)
VI. Rabbit No 6 —10 c.c. injected intravenously No effect. (March 19th)	VI Rabbit No 5 —Weight, 2750 grammes. 3 5 c c. injected intravenously Immediately after injection was convulsed and died almost at once (March 19th.)

From these tests of toxicity we find that about 3 c.c. of a 1 per cent solution of ordinary cocaine hydrochloride (equivalent to about ½ grain) is a fatal dose for a rabbit of 2000-3000 grammes weight, injected intravenously

As regards the collosol cocaine, 10 c.c. of the 1 per cent. preparation (equivalent to about 1·6 grains) produced no toxic effect whatever

W J SIMPSON
R. T HEWLETT

Guy's Hospital (Bacteriological Department),
April 21st, 1917

REPORT ON SPECIMEN OF COLLOSOL COCAINÆ 1 PER CENT RECEIVED FROM MESSRS CROOKES LABORATORIES

A. *Toxic properties* —A full grown rabbit, weighing 2000 grammes received on March 1st 2 c.c. of collosol cocainæ 1 per cent. intravenously the injection being made at the rate of 1 c.c. per minute. No immediate or remote effects were observed. On March 12th, the same rabbit received 15 c c of the same solution intravenously within ten minutes No immediate or remote effects were observed. Five hours later 3 c c. of the 1 per cent. solution of cocainæ hydrochlor were injected at the rate of 1 c.c per minute Just before the injection of the third c c had been completed the animal was seized with convulsions and died within a minute. Identical results were obtained on two subsequent occasions In my opinion therefore collosol cocainæ can be regarded for all practical purposes as non toxic.

B *Anæsthetic properties* —1 Two drops of collosol cocainæ dropped into the left eye of a rabbit produced mydriasis and complete anæsthesia in three minutes 2. Two drops collosol cocainæ instilled into the left eye of the human subject produced complete anæsthesia and enabled me to remove a foreign *body embedded in* the cornea without pain (I can personally vouch of the completeness of the anæsthesia as the *foreign body* was embedded in my own cornea and I removed it myself in front of the looking-glass) 3. 0·8 c.c. collosol cocainæ injected into the male urethra (a very nervous and sensitive patient) produced complete anæsthesia in five minutes and permitting the passage of a 7 5 mm. urethrascope.

The above three representative examples indicate the nature of evidence which in my opinion, establishes the claim of the Crookes collosol cocainæ that it can be regarded as an efficient local anæsthetic.

JNO EYRE.

It is certainly not a little remarkable that colloidal cocaine can be given exclusively for its anæsthetic effects, and it seems probable that we are in the presence of a remarkable development in therapeutics as we on a previous occasion predicted might occur in connexion with colloidal treatment.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be temporary Surgeons: R. E Rampling D Heard T. L P Harries, F M. Mosely A. E. P Parker N Braithwaite.

The following appointments have been notified— Fleet Surgeon: W H Pape to *Pembroke*. Surgeons: C F Willis to *Halcyon*, and E C Holton to *Vivid*. Surgeons (temp) M Neilson to *Leander* R A. Hobbs to *Albion* D W Warren J R S Thompson, and J H B Hogg to *Vivid* R M Barrow and R L. Glass to *Pembroke*, H Waldo and J L. Lamond to *Victory*

ARMY MEDICAL SERVICE

Col J T Fotheringham, C.M.G Canadian A.M.C to be temporary Surgeon-General

Lieut.-Col (temp Col) R R. Sleman relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services.

Col. J H Daly is retained on the active list and to be supernumerary

Capt D W Hardy to be Deputy Assistant Director of Medical Services

TERRITORIAL FORCE.

Lieut.-Col W K Clayton to be temporary Colonel whilst an Assistant Director of Medical Services

Lieut.-Col (temp Col) J Young relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services

ROYAL ARMY MEDICAL CORPS

Lieut.-Col. R R. Sleman is restored to the establishment.

Capt. (temp Maj) J W Keay to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

A. M Paterson to be temporary Major

Temp Capt Gerald S Samuelson to be temporary Major whilst commanding troops on a Hospital Ship

Capt. R. C Carlyle is seconded for service with the Egyptian Army

Capt. D W Hardy is seconded while holding an appointment as Deputy Assistant Director of Medical Services

Lieut A C Ainsley to be Captain

Temp. Lieut George F B Simpson to be temporary Captain

H T Thomson to be temporary Honorary Captain whilst serving with No 11 Stationary Hospital.

E Harding to be temporary Honorary Captain whilst employed with No 22 General Hospital.

Temp. Capt. F G Crookshank relinquishes his commission

Temp Hon Lieut T A. Loughrey from Canadian A.M.C to be temporary Lieutenant

SPECIAL RESERVE OF OFFICERS

Lieutenants to be Captains: T Crisp, A. L. Giblin, M McG Russell R C B Ramsay, A. L. V Davin W Richards

TERRITORIAL FORCE.

Lieut. Col W K Clayton is seconded whilst holding an appointment of Assistant Director of Medical Services

Capt (acting Lieut -Col) A. A. Hingston reverts to the temporary rank of Major on ceasing to command a Field Ambulance

Lieut. Col. J Young is restored to the establishment

Capt. (temp Lieut. Col) P Moxey relinquishes his temporary rank on ceasing to command a Field Ambulance

Capt. B. G Annis to be acting Major whilst in command of a Field Ambulance

URBAN VITAL STATISTICS

(Week ended April 1 th 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000,000 the annual rate of mortality was 18 5 against 18·0 and 17 3 per 1000 in the two preceding weeks In London with a population exceeding 4 000,000 persons the death rate was 19 5, or 2·6 per 1000 above that recorded in the previous week among the remaining towns the rates ranged from 7·0 in Edmonton 8 2 in Grimsby and 9·1 in Eastbourne to 28 2 in Dudley and in Southend-on Sea, and 38·6 in Hastings The principal epidemic diseases caused 505 deaths which corresponded to an annual rate of 1·6 per 1000 and included 320 from measles 66 from whooping-cough, 51 from infantile diarrhœa 45 from diphtheria, 13 from enteric fever and 11 from scarlet fever The deaths from measles showed a further increase compared with the numbers in the 11 preceding weeks, and caused the highest annual death rates of 3·6 in West Ham and in Sunderland 5·2 in South Shields 5·9 in Bolton and 7 3 in Dudley The 722 cases of scarlet fever and the 1317 cases of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 33 below and 20 above the numbers at the end of the preceding week Of the 6010 deaths from all causes in the 96 towns 167 resulted from violence. The causes of 67 of the total deaths were uncertified and included 10 in Liverpool 8 in Birmingham and 5 in Sheffield

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500 000 persons the annual death rate was equal to 19 1 against 17·9 and 16·9 per 1000 in the two preceding weeks The 410 deaths in Glasgow corresponded to an annual rate of 19 2 per 1000 and included 27 from measles 22 from whooping-cough 7 from infantile diarrhœa, and 2 from diphtheria. The 141 deaths in Edinburgh were equal to a rate of 22·2 per 1000 and included 22 from measles 18 from whooping-cough and 1 from infantile diarrhœa.

Irish Towns —The 225 deaths in Dublin were equal to a rate of 25 8 or 2 1 per 1000 above that recorded in the previous week, and included 15 from measles 2 from infantile diarrhœa, and 1 from whooping-cough The 173 deaths in Belfast corresponded to an annual rate of 22 6 per 1000 and included 4 each from enteric fever and measles and 3 each from whooping-cough and infantile diarrhœa.

Correspondence.

"Audi alteram partem.

"SOLDIER'S HEART"

To the Editor of THE LANCET

SIR,—As medical adviser to a large insurance company a considerable number of cases were referred to me recently in connexion with the short-term endowment policies for the purpose of the War Loan Among them one group specially impressed me in relation to the subject of "soldier's heart" recently discussed in your columns

I saw several young men, some looking jaded and worn, others robust and well, who all alike said they had been discharged from the Army as unfit for service for valvular disease of the heart, some showed me their certificate to that effect On my examination the heart yielded no abnormal physical signs It was of the usual size its apex in the proper place, its action regular, and its sounds normal There were no murmurs and no cardiac symptoms The heart was therefore presumably healthy It was, at any rate, certain that there was no valvular disease The men when at the front, I ascertained, had some cardiac symptoms—viz., shortness of breath, palpitation, and even pain on exertion—i.e, signs of cardiac overstrain They were therefore rightly put upon the sick list. I presume there must have been murmurs also upon which the diagnosis of valvular disease must have been made

The cardiac murmurs which are associated with nervous excitement and with dilatation of the heart do not seem to be as familiar as they should be to those who are responsible for these certificates for though the cases I speak of came in a group several others have fallen under my observation in private practice, and I have for some time had it in mind again to draw attention to the subject These functional murmurs, as they are usually called, are almost without exception systolic, and may be heard at the base or apex, or widely over the whole præcordium. Of the base murmurs it is unnecessary to refer to those at the left or pulmonary base, associated with anæmia, especially as they are hardly ever met with in young men A more important murmur but one rarely referred to, and, I think, not generally recognised, is that which, systolic as usual, occurs over the aortic base and above. It is more frequently met with under those very conditions which these "soldier's" cases would present—viz., nervous excitement where the results of the examination and the decision based upon them are important, and arouse anxiety in the candidate In ordinary times this murmur is most often met with in candidates for insurance, where marriage, it may be or a valuable appointment hangs upon the verdict This murmur is often quite loud, audible at the right base and for a short distance above, and it may be almost musical. It is not unlike the murmur of slight organic disease but it is transitory, disappearing, it may be, in a few minutes when the excitement passes off, and it is easily reproduced if the excitement returns

Besides these murmurs at the base, transitory murmurs may be heard at the apex or over the body of the heart. These have been called dilatation murmurs—not a good name as mixing up facts and interpretation, but justifiable perhaps in this instance as the murmurs vary with the dilatation and come and go with it. Though systolic in time they are not propagated as they should be if these were due to regurgitation through the mitral or tricuspid valves On the left side they are limited to the præcordial area and are not heard in the axilla or behind. Where dilatation of the heart is extreme they may be propagated just as the murmurs due to organic disease both on the right and left side, and these no doubt are truly regurgitant but it is not in these cases that the diagnosis is difficult for the evidence of extreme dilatation is obvious When the heart is weak, as in convalescence from long illness these murmurs may be easily produced by a little over exertion and their association with dilatation be easily demonstrated

The diagnosis of valvular disease of the heart is a serious matter for the subject of it Wrongly made it may unfairly ruin a promising career in the Army or in some other profession where a certificate of health is required while it will of course, strongly prejudice the prospects of life insurance Worst of all, it may partly by the alarm it may excite, and *partly owing to the treatment* which such a diagnosis is thought to involve, convert the unhappy victim into a cardiac hypochondriac, and make him a misery to himself and all about him I recall the case of a young man who presented himself for examination for an insurance on his life prior to his marriage *The doctor looked gravely* at him and said, ' Young man, *walk* through life " He did not *walk through life*, but ran at a racing speed Yet he lived till a good age, and never had a cardiac sign or symptom Fortunately, the man had too busy a life to act on the suggestion or to dwell on it Otherwise it might have been disastrous

If *the* existence and frequency of these murmurs be kept in mind the diagnosis is, as a rule, not difficult Mistakes can be avoided by a little more knowledge and caution The knowledge would suggest caution, and the caution would be justified by the disappearance of the murmurs and the proof that the *suggested diagnosis was wrong*

I am, Sir, yours faithfully,

Wimpole-street, W, April 21st, 1917 SAMUEL WEST

"MILITARY CARDITIS"

To the Editor of THE LANCET

Sir,—*May I suggest* "*military carditis*" *as* a useful term for the soldier s cardiac effort syndrome of which so much has been heard recently? We have the authoritative example of Thomas Watson for such a comprehensive term when dealing with a problem that is not easily defined, and as a former pupil of Dr *Frederick Roberts I think* there is much to be said for the emphasis he used to lay upon what he called "cardiac apparatus" when discussing problems of the heart In an organ like the heart where the three parts—endo myo-, and peri cardium—are so intimately associated it is difficult to draw a hard and fast line between disease of the one and the others, in fact, in many cases it cannot be done

So far attention has been devoted almost entirely in "military carditis" to the myocardium, apparently because the peri and endo cardia do not show any gross lesions, but neither does the myocardium in many cases I have drawn attention elsewhere to the importance of the peri cardium and its fluid, pointing out that that fluid exists *normally under a negative pressure, whereby the fluid is kept* at an equal thickness all over the surface of the heart I have pointed out also that most likely the movements of this peculiarly circumstanced fluid have much to do with the sounds of the heart, a contention that is supported by my rubber balloon experiments The opinion I have formed after examining many hundreds of men before the furnaces as well *as boys before and after running*, *is* that the increased cardiac dullness is due to an increase of pericardial fluid which is of such physiological importance in connexion with the running of the accelerated heart Experiments also bear out this statement, for the pericardia of rabbits shot *standing contain less* fluid than the pericardia of those shot when driven out by ferrets—i e, under stress and strain Another interesting fact in this connexion is that the effect of killing cats by chloroform is to cause an increase of peri cardial fluid and a sudden variation of the intrapericardial pressure

Does shell shock produce such a sudden variation of the intrapericardial pressure? and does it thereby cause a dis turbance of the regular wave movements of the fluid which are to a great *extent responsible for* the sounds of the heart? Dr Lewis, who is quoted as an authority on electro cardiography, states that the curves are due to impulses which have travelled the auriculo ventricular bundle, although similar curves are obtainable from the lower order of animals in which there are no such bundles! The fact that throughout the vertebrate series we find pericardia and pericardial fluids is *evidence of their great* importance, and that the latter have much to do by means of their electrical resistance with the causation of the so-called *electro-cardiograms*

As a result of my experiments I have devised a double chested stethoscope which I call the "Cardioscope" whereby I find that in normal hearts the sounds conducted to each ear separately are equal, whereas in abnormal states the sounds are *unequal By this* instrument one hears the "murmurs" resolved into other sounds

I am, Sir, yours faithfully,

Swansea, April 14th 1917 G ARBOUR STEPHENS

THE TECHNIQUE OF LUMBAR PUNCTURE

To the Editor of THE LANCET

Sir —Surgeon F A Williamson's letter in your issue of April 21st refers, as you remark, to a real difficulty occa sionally experienced in the *technique of lumbar puncture* and one to which he does well to draw attention The failure *of a considerable collection* of cerebro spinal fluid to flow freely until the needle is manipulated whilst *in situ* may be due to the fact that a constituent of the cauda equina temporarily blocks the needle at its orifice or that the needle at first enters only a small loculus of fluid and not the main cisterna *In connexion* with the *first possibility* it may be noted that if the lumbar cisterna is distended by fluid there would be a greater tendency for a nerve root to be pressed against the orifice of the needle than if the normal conditions obtained. In connexion with the second possibility, it must be remembered that the pia arachnoid system is not a simple cavity but a *series of small and large cavities separated* by *trabeculæ*. The free intercommunication in health of the loculi so formed is no doubt interfered with in disease by the added factor of plastic lymph deposit Whatever the cause may be, the moral, as your correspondent points out, is not to be content with a restricted flow in any case, and especially not to be content with this result in a case suspected on clinical *grounds to be one of* cerebro spinal fever, *until the needle is* pushed a little farther in or is slowly withdrawn a little or is tested as to its patency by passage of the trocar or stylet I use the term ' restricted flow" rather than "at a normal rate" in such a case because I am always more suspicions that I am *dealing* with an instance of the difficulty to which your correspondent refers when the fluid flows at *less* than the normal rate *I think many practitioners under* estimate the initial rapidity of the normal rate of flow immediately after the puncture is made

It may not be out of place to refer to one or two other difficulties that not infrequently present themselves in con nexion with lumbar *puncture One of these* again has to do with restricted flow of the fluid. Operators sometimes use a long needle for a small patient, and do not notice that the needle is pointing upwards its delivery end being well above the level of any part of the cerebro spinal system This difference of levels may have been increased by raising the hips well on to the edge of the bed for convenience of the procedure, thus leaving the child's trunk and head in the trough of the bed Should the cerebro-spinal pressure not be much, or at all, raised, very *little fluid may flow* until the patient s hips are rolled over towards the needle, the delivery end of which is thus brought to a much *lower level* Thi point in technique becomes important when it has been decided to drain a highly purulent exudate as *completely* a possible

The admixture of blood with the cerebro-spinal fluid con stitutes another difficulty in the technique, as it prevent accurate chemical and histological investigations If this i seen to occur the first few drops of *fluid should* be received into a separate vessel (indeed this is always a sound thing to do), and the needle should be slowly withdrawn a little because it is very likely that the *blood* is contributed by th venous plexus lying on the anterior wall of the canal I the *blood is still present*, and it is not obvious from th naked eye examination that the fluid is also purulent—i which case the histological and chemical examinatio becomes of no great differential value—the needle shoul be withdrawn and a fresh puncture *should* be made at different space

Finally, a word may be added in regard to so-called "dr punctures ' If the points in manipulation referred to abov are *observed* it may almost certainly be concluded that th *meaning of a dry puncture* is that the needle has not entere the pia arachnoid space at all

I am Sir yours faithfully,

Harley street W April 22nd 1917 THOMAS J HORDER.

THE AFTER-TREATMENT OF INFECTE HÆMOTHORAX.

To the Editor of THE LANCET

Sir —Since one of the chief dangers of an infected hæm thorax is the secondary infection which almost invariabl occurs after resection and drainage, any method of treatme which will lessen or prevent this will prove of the utmost importance and value

The results of the Carrel-Dakin method have been most striking and shown by —1. The uninterrupted improvement in the general condition of the patient after resection and the rapid settling of the temperature 2. The very rapid obliteration of the cavity 3 The small quantity and inoffensive nature of the discharge. 4 The firm primary union of the sutured portions of the empyema wound.

After resecting and draining in the usual way the Dakin's solution is not at first run into the pleural cavity on account of the risk of breaking down loose adhesions, but the dressings are kept constantly moist by means of irrigation every two hours with a few ounces of the solution The procedure here is to use a Carrel tube in the form of a horseshoe with multiple small perforations. The open ends are connected with the tube leading to the reservoir by a two-way glass connexion. The horseshoe is kept in position by being placed under the safety pin of the drainage-tube and by being attached to the chest higher up The surrounding skin may be protected with sterile vaseline but in practice this is not essential, since the hypochlorite rapidly loses its tendency to irritate after contact with the discharge from the empyema After ten days or a fortnight a Carrel tube with few terminal perforations may be inserted into the pleural cavity alongside the drainage-tube and irrigation every two hours with a few ounces of *half strength* Dakin Daufresne solution carried out

After an extended experience of septic hæmothorax and the deleterious effects of the secondary infection after resection we have been firmly convinced of the value of the above method in lessening or almost preventing this important complication. I am Sir yours faithfully

C DEAN M B Oxon

Millicent Sutherland Ambulance, B.E.F., April 17th, 1917

THE CLOSURE OF COLOTOMY OPENINGS

To the Editor of THE LANCET

SIR,—Had Mr P Lockhart-Mummery, in his letter to THE LANCET of April 7th, confined himself to the subject of his paper I should not have troubled you with a second communication but as he has extended his remarks to the methods of treating cancerous growths of the colon and asks Why are surgeons so shy of primary resections and suture of the colon that they subject their patients to three operations where one would do " and as he goes on to say that this seems an altogether unnecessary procedure " his attitude towards a subject of which he professes to be a master demands attention

If he will turn to the transactions of the Surgical Section of the International Congress of Medicine held in London in 1913 he will find in the report of Professor Bastianelli and the subsequent discussion on the treatment of cancer of the colon the answer he requires [1] As this report in full may not be accessible to some of your readers I may say, briefly, that one of the most serious bars to the success of primary resection of the colon is the presence of hard fæcal masses above the growth and that this handicap can be removed by a preliminary proximal colostomy followed by washing out the diseased segment of bowel. By this means we secure a relatively clean field for operation while afterwards the line of union is freed from the irritation of the fæcal stream now diverted Again, intracolic pressure and tension on the suture line from gaseous distension are entirely obviated and rest, so essential to good union of intestinal wounds is secured It is worth while noting that Mr Lockhart-Mummery, in a later paragraph in his letter while advocating his view that the bowel should be made to act daily from the time of the resection unconsciously furnishes reasons for the multiple operation Thus he states that flatus in the bowel is far more dangerous than a little liquid fæces " and, again that the one thing to avoid is the presence in the neighbourhood of the anastomosis of masses of hard fæces

From a long and fairly large experience of resection of the colon with and without actual intestinal obstruction I am firmly convinced that the inclusion of a preliminary colostomy has reduced enormously the death rate of the operation Reverting to the original subject Mr Lockhart-Mummery asserts that the Greig Smith operation is 'liable to leave a weak spot," that 'many patients have to wear a belt " and that ' it may be followed by stricture." My reply is that I have not seen a single instance of any one of these defects, nor do I think any of them should occur if the operation is properly done, and certainly not in the case of young soldiers with well-developed abdominal muscles Possibly some ambiguity as to the essentials of the procedure has arisen from calling it the extraperitoneal method Personally, as I said in my former letter, I do not dread opening the peritoneum. The one factor which makes the operation so much safer than resection of the bowel is that the mesenteric side of the colon with its vascular and nerve-supply is not interfered with.

As to details the most important thing to attend to is to freely mobilise the opening and the adjacent colon When this has been done the involved segment can be lifted out of the abdomen, and with adequate gauze packing it is a matter of little or no consequence whether the peritoneum is or is not, opened. As to stricture following the operation bearing in mind that usually at least one-half of the circumference of the bowel is not involved and that if the sutures are inserted at right angles to the long axis of the colon the lumen is not encroached on and that most preliminary colostomies are placed in the capacious ascending colon, there need be no fear of this developing One word as to the spur This formidable bugbear exists only so long as the colon is anchored to the abdominal parietes. Freely mobilise the involved segment of the bowel and the spur ceases to have any significance and enterotomes any useful application. I am, Sir, yours faithfully

Sheffield April 7th 1917 SINCLAIR WHITE.

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[1] THE LANCET, 1913, ii., [illegible]

READING BY EAR

To the Editor of THE LANCET

SIR,—I notice in your issue of April 14th certain criticisms by Sir Arthur Pearson on the speed attainable in reading ordinary letterpress by ear with the optophone. The speed attained on March 28th was a maximum of three words a minute My estimate of 25 words a minute was based on the fact that the signals remain clear and characteristic at that speed. It is therefore only a matter of practice Three months ago neither I nor anybody else had ever read a line of letterpress by ear The reading of the *Times* blindfold is now a possibility demonstrated beyond doubt or cavil. The instrument is substantially that described in Roy Soc. Proc. A, 90, p 373 —I am, Sir yours faithfully,

E. E FOURNIER D ALBE, D Sc.

Maddox-street W., April 20th, 1917

Obituary.

WILHELM WINTERNITZ

Wilhelm Winternitz, who died, we now learn, on Feb 22nd at the age of 82 years, was emeritus professor of medicine in the University of Vienna and had long earned the title of the "father of scientific hydrotherapy," presiding in this capacity at the last great balneological congress held at Meran before the war From the time of his inaugural dissertation (1865) on "The Rational Basis of Certain Hydrotherapeutic Measures' to the appearance a few days before his death, of "The Water Cure and Natural Immunity ' Winternitz was constantly occupied in research on physical treatment Many of his studies of the action of thermo-mechanical influences on the circulation and metabolism are now classical, as well as the long and bitter feud between himself and Liebermeister with regard to the bath treatment of infectious diseases. His idea of determining a blood flux to particular organs and parts of the body was worked out in great detail long before Bier annexed the word "hyperæmia." Winternitz's belief in his own methods was very great so that he imbued his patients with a like confidence, and he was for nearly half a century one of the busiest consultants in Vienna. But in spite of his great popularity he remained an inquirer and a research student to the last intent on improving the field of medicine which he had so specially made his own

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt T W Martin R A M C, attached Royal Scots, received his medical education at Victoria University, Manchester, and qualified in 1912 He was in practice at Hale, Cheshire, before joining the R A.M C

Capt V K Sadler, R A M C was educated at Rossall School and at University College, London and qualified in 1907 After serving as medical officer at Tiverton Infirmary he became a surgeon to the P and O Line Later he joined the R A M C, and went to the front at the beginning of this year

Capt G R Plaister, R A M C, attached York and Lancaster Regiment, was a student at the London Hospital and qualified in 1905 He was in practice at Tottenham, London, before joining up, and went to the front in September, 1915, taking part in the engagements at Loos and on the Somme

Lieut E Evans, R A M C, attached Royal Welsh Fusiliers

Accidentally Killed

Capt J J Weaver, R A M C, was a student at University College, London, and qualified in 1886 He was medical officer of health for the county borough of Southport, and had made several contributions to the medical journals He died at Curragh Camp as the result of a riding accident

Died

Lieut L G Scudamore, R A.M C, was a student at St Thomas's Hospital, London, and qualified in 1891 He was in practice at New Tredegar, Mon, prior to joining the R A.M C in June, 1916, and died in camp in England after a short illness

Capt T McCosh, M C, R A.M C, qualified at Glasgow in 1905 and held a house appointment at the Glasgow Western Infirmary He was in practice at Woodford Green, Essex, previous to joining the R A M C, and had been awarded the Military Cross

Died of Wounds

Lieut J A Gregory, R A M C, was educated at Manchester University and qualified in 1914 He held the appointment of house surgeon at the Evelina Hospital for Children, London, and joined the R A M C in June last

Wounded

Major G J Boyce Canadian A M C

Capt J F Murphy, M C, R A M C, attached Royal Field Artillery

Capt W Parker, R A M C, attached King's Own Scottish Borderers

Capt J S Prentice R A.M C, attached Royal Berks Regiment

Capt J G Brown, R A.M C, attached Royal Irish Rifles

Capt A. Short, New Zealand Medical Corps

Capt A. H Thomas, R A M C

Capt T C Storey, R A.M C

Capt R J Gardiner, Canadian A M C

Capt G R Johnson, C A.M C, attached Canadian Infantry

Capt W G Goudie, R A M C, attached Royal Flying Corps

Capt R A. W Proctor, R A M C, attached Royal Fusiliers

Capt G J Linklater, R A M C

DEATHS AMONG THE SONS OF MEDICAL MEN

The following sons of medical men must be added to our lists of those who have fallen during the war —

Second Lieut R A Patterson, Rifle Brigade, second son of Dr C S Patterson, of Eastbury, Berks

Lieut B Rundle, Australian D A C, youngest son of the late Dr G E Rundle, of Creewood, Sydney, Australia

V E J Bristowe, R A.M C, attached East African Expeditionary Forces, youngest son of the late Dr J S Bristowe, F R S, of London

Capt T W Martin, R A M C, attached Royal Scots, younger son of the late Dr W Y Martin, J P, of Walkden, near Manchester

Capt K J Barrett, Royal Fusiliers, elder son of Lieut Col J W Barrett, C M G, R A M C, of Melbourne, Australia

Capt J J Weaver, R A M C, elder son of the late Dr J Weaver, of Southport

Lieut W D Chepmell, Royal Sussex Regiment, son of Dr C Chepmell

Second Lieut H C Oulton, Leinster Regiment, second son of Dr H W Oulton, of St Stephen's Green, Dublin

FOREIGN DECORATIONS

By the King of the Belgians

Ordre de la Couronne—*Officier* Capt. S R. Douglas, late Indian Medical Service St Mary's Hospital London, Temp Col. Sir A. E. Wright C.B Army Medical Service, St. Mary's Hospital, London. *Chevalier* Temp Lieut E Shaw, R A.M C

By the King of Serbia

Order of the White Eagle 4th Class—Lieut. Col. E T F Birrell, C M G R A.M C Maj M J Cromie, R A.M C

By the Sultan of Egypt

Order of the Nile—*3rd Class* Maj R. G Anderson R.A.M.C, late Assist Adjt. Gen Recruiting Dept. Egyptian Army; Maj W Byam, R A M C late Medical Corps Egyptian Army *4th Class* Capt. E Gibbon R A M C attached Medical Corps, Egyptian Army

THE CENTRAL MEDICAL WAR COMMITTEE AND THE MOBILISATION OF THE MEDICAL PROFESSION

Lord Derby's letter to the medical profession was the subject of discussion at a special joint meeting on Tuesday last of the Central Medical War Committee and the Committee of Reference of the Royal Colleges, when the following resolution was unanimously adopted on the motion of Sir Watson Cheyne, President of the Royal College of Surgeons of England, seconded by Mr E B Turner, Chairman of Representative Meetings of the British Medical Association —

> That the Central Medical War Committee and the Committee of Reference cannot continue to bear the responsibility in the eyes of the medical profession and of the community for protecting the medical needs of the civil community while meeting the requirements of the Army unless they still have the duty of deciding how many doctors and which individuals can in fact be spared at any given time from civil work in a particular place to enter military service, and that, therefore unless the War Office will undertake not to grant any commission to a doctor even though volunteering for service whom the committees consider to be for the time being indispensable for civil work the committees will be unable to take any further part in the selection of doctors for military service

Copies of the resolution were sent to the War Cabinet, the Secretary of State for War, and the Director General of the Army Medical Service

The reasons which have led the Central Medical War Committee to take this step are given at length in a statement, dated April 25th, a copy of which was sent to Lord Derby and which was issued later to the press

> In order to make the position plain the Central Medical War Committee conceives it to be its duty to the civil community to place on record a statement of the reasons which lead the Committee, in virtue of its special knowledge gained from the work it has done statutory and otherwise for the Government, to the conclusion that, unless special precautionary measures are adopted the immediate calling up of all doctors under 41 for military service affected by the War Office must inflict grave injury on the civil community in many parts of the country particularly in the industrial areas upon which so much depends both as to the production of war material and otherwise, for the carrying on of the war
>
> It is obvious that in order to avoid a breakdown in a locality, it is essential that before any doctor at present engaged in civil work is actually withdrawn from his duties the question as to whether he can at the time safely be spared from civil work must have been properly investigated to the extent required by the nature of the case either by the Central Medical War Committee, or by some other body acting on behalf of the Government possessed of the knowledge requisite for gauging the needs of the locality
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> Hitherto the Central Medical War Committee aided by its local committees in all parts of the country and in coöperation with the Government departments concerned has performed this duty for the Government watching continuously the varying conditions of the medical services in each locality and determining from time to time in the light of those conditions how many and which doctors could be spared at any particular moment
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> The notice issued by the Recruiting Department on Wednesday April 18th, calling up all the doctors under 41 for immediate departure on service on April 26th threw the Committee's machinery entirely out of action and, although it would seem from certain phrases in Lord Derby's letter published subsequently that some revival of the former arrangements with this Committee is contemplated, it is clear that nothing short of a Government decision to maintain the complete continuance of the requisite scrutiny will suffice to avert grave danger
>
> The following places may be mentioned as illustrating the dangers which in the absence of such scrutiny must inevitably arise in many areas:—Town *A* (chemicals and munitions) Population over 20 000. Number of doctors 4 all of military age Town and district *B* (shipbuilding) Population over 60 000 Number of doctors 10 7 of military age District *C* (coal mining) Population over 37 000. Number of doctors 7 6 of military age District *D* (agricultural area) Population (of town alone) 3628 Two doctors, both of military age. Town *E* (country town) Population over 20 000 Number of doctors 4 3 of whom are of military age Town district *F* (industrial area) Population about 126,000 Number of doctors 25 of whom 4 are of military age There is at present only one doctor to over 5000 people
>
> It is clear that from none of these areas could all the doctors liable under the Military Service Acts be withdrawn simultaneously without complete breakdown. But under the arrangements so far made in connexion with the immediate calling up of the doctors there is nothing to secure that these men will not in fact be withdrawn.
>
> Doubtless the War Office if aware of the facts, would not propose to take all the doctors from the town *A* and leave a population of 20,000 in a munition area entirely without any medical practitioners to look

after them But the War Office is not in possession of the knowledge requisite for avoiding the mistake nor is it possible for any general or mathematical rules to be formulated for such purpose The necessary safeguards can only be applied by a body which is continuously surveying the needs and the comparative conditions of the various localities

It is clear, the statement concludes, that if the situation above indicated is to be avoided, as the Government must obviously desire to secure, it must be definitely provided that no doctor, even if he himself offers no objection to going, shall be withdrawn by the War Office from the work of the civil community until the competent body authorised by the Government has ascertained and reported that his departure will not cause a breakdown

Lord Derby s Reply to the Committee

The reply received from the Secretary of State for War bearing the same date as the covering letter enclosing the Central Medical War Committee's resolution and statement was to the following effect —

War Office London S W 1 April 25th, 1917

GENTLEMEN —I am in receipt of your letter of April 25th and in answer to it I beg to state that I agree that the procedure prevailing up to last week with regard to the selection of doctors shall be continued and I will further agree not to give a commission to any doctor except on the recommendation of your Committee

Your Committee is asked to provide the Army with *x* doctors by May 1st and *y* doctors per week after that date until the requisite number *x* has been found In the event of the number so asked for not being forthcoming I must reserve to myself the right at any time to reconsider the position

I trust that this arrangement will be agreeable to your Committee and that they will continue doing the excellent work for the War Office that they have done in the past Yours faithfully

(Signed) DERBY

The Text of Lord Derby s Letter to the Medical Profession

The text of the letter addressed by the Secretary of State for War to members of the medical profession in Great Britain was as follows —

War Office London S W 1 April 21st, 1917

SIR —I am desired by the War Cabinet to ask your earnest consideration of the following matter The enemy in total disregard of the accepted tenets of civilised warfare have deliberately instituted a submarine campaign against hospital ships It has therefore become essential that a large number of hospitals should be established overseas in the various theatres of war for the treatment of the sick and wounded

In order to allow of this being done and done with great rapidity it has become essential to secure the services of every member of the medical profession who can possibly be spared from this country The figures in the possession of the Government make it plain that the number of doctors who could be spared from this country are more than are needed to supply the military requirements if adequate steps are taken by the doctors over age or by other means for doing the work in this country of the men who must now be taken for medical service overseas For these reasons the War Cabinet have decided as the first step in this process that every medical man of military age must be called up at once under the Military Service Acts in order that he may thus be made available at once, and that, if he cannot be spared from his locality without arrangements being made for carrying on his work his case may be immediately investigated and decided upon and steps taken for securing a substitute for that work

Every medical man thus summoned must therefore communicate immediately to the Central Medical War Committee (or the Scottish War Emergency Committee) if he is of opinion that circumstances (personal or public) make it impossible for him to go e.g that he can only be spared from his present duties when some arrangements have been made for doing his present work. May I express the earnest hope that every doctor over military age will immediately offer his services to the Local Medical War Committee of his area as willing to undertake any substitution work within his capacity which would help to release any man of military age who cannot otherwise be spared ?

The War Cabinet recognise to the full the great services that the medical profession has rendered during the present war and regret that the barbarous action of the enemy compels a further call on their services and a resort by the Government to measures which the Army Council had intended to avoid and could still have avoided but for this new phase of German outrage They recognise that the new procedure must involve additional sacrifices for the people of these islands and must fall heavily on the medical profession But the War Cabinet trust and believe that this call will be met in the same splendid spirit with which previous calls have been met, and that members of the medical profession and the public whom they serve will ungrudgingly make whatever sacrifices may be necessary in order that our soldiers abroad may have the same attention and care which medical science provides for their comrades at home

I am Sir your obedient servant

(Signed) DERBY

THE NATIONAL MEDICAL UNION AND MEDICAL MOBILISATION

We have received from the National Medical Union a communication signed by the chairman of the council and of the executive committee welcoming that portion of Lord Derby s letter which states his determination to call up immediately all medical practitioners of military age but objecting to non panel practitioners being asked to attend patients under the National Insurance Act The alternative is stated thus —

> While the simplest, and therefore the best means for utilising the services of the whole profession at this juncture would in our opinion, be the abrogation during the war of the Medical Benefit Section of the National Insurance Act, an emergency measure for the remuneration on non panel lines of non panel practitioners called upon to attend insured persons could we believe, be devised with the funds now at the disposal of the National Health Insurance Department It would be based upon the sound principle of payment for work actually done and would involve the allocation of no additional public money or instant disturbance of the Act.

THE WAR AND HOSPITAL SHIPS

The sinking of hospital ships by the enemy continues On April 17th the s s *Donegal* and the s s *Lanfrano* were torpedoed without warning The *Donegal* was carrying slightly wounded cases, all of them British, out of whom 29 men and 12 of the crew are missing The *Lanfrano*, in addition to 234 wounded British officers and men, carried 167 wounded Germans a medical personnel of 52 and a crew of 123 Of these, 2 wounded British officers, 11 wounded British of other ranks, 1 R A.M C staff, 5 crew, 2 wounded German officers, and 13 wounded Germans of other ranks are reported missing and presumed drowned British patrol boats rescued 152 wounded German prisoners The vessels were under escort, and one of them bore the distinctive marks laid down by the Hague Conference The Admiralty announce that in future ships carrying wounded will bear no distinctive markings, and will proceed at night without lights, inasmuch as the prescribed markings now serve only to make the ships a better target for the enemy

The International Red Cross Committee at Geneva has addressed a protest to the German Government in reference to its order of Jan 29th regarding the sinking of hospital ships and the sequel to this order —

> The International Committee whose right and duty it is to enforce respect for the principles of the Red Cross and the Geneva Convention by reporting violations of them draws the very serious attention of the German Government to the responsibility which it would assume towards the civilised world by persisting in a resolution which is in contradiction to the humanitarian conventions which it has pledged itself solemnly to respect
>
> In torpedoing hospital ships it is not attacking combatants but defenceless beings wounded or mutilated in war and women who are devoting themselves to the work of relief and charity Every hospital ship is provided with the external signs prescribed by international conventions, the use of which has been regularly notified to belligerents and should be respected by belligerents. The latter may according to the Hague Convention exercise the right of search, but have in no case any right to sink a ship and expose to death the hospital staff and the wounded
>
> The *Asturias* appears to have been torpedoed without any care having been taken to ascertain her character or her destination Even if the correctness of the facts were admitted upon which Germany bases justification of her order the International Committee considers that nothing can excuse the torpedoing of a hospital ship and expresses the hope that such an order contrary to international conventions will cease to be carried out

MEDICAL MOBILISATION IN AMERICA

A practical spirit pervades the preparations which are being made by the medical profession in America for the emergencies of war A recent number of the *New York Medical Journal* states the statistical side of the problem —

> Our regular army now numbers 125,000 men, and the National Guard about 160 000 If recruited to full war strength they would number 280 000 and 440 000 respectively or a total of 720 000 For this army some 5000 medical officers would be required In addition to this we have another army of 500 000 called to the colours for training making a first line defence of 1 220 000 men In addition it is expected that at least a million and a half more troops will be called out during the year for training making a total of 2,720 000 troops under arms Such an army would require 19 000 medical officers We now have in the regular army about 1200 medical officers and in the National Guard about as many more making about 2400 officers and leaving a deficiency of 16,600 medical officers to be supplied from civil life In view of the fact that we have in the United States only 145 000 registered physicians it will be seen that the new army will face a deficiency in a direction in which it will be difficult to improvise aid

On the basis of the latest figures the number of registered medical men in the United States in 1916 was 145 241 and in the dependencies 1372 while the number of students qualifying during each of the last two years has been in the neighbourhood of 3000 With 3000 young men on the point of graduating and 2500 senior students, in addition to a large number of recently qualified men holding hospital appointments or just started in practices the deficiency of 16 000 medical officers can in large part promptly be made good The majority of these men will be in a position to join one or other branch of the medical service, while senior men will be required to fill places in the special branches of preventive medicine which form an essential part of the modern medical service Special arrangements have been made excusing senior students on enrolment the completion of their current term of study

The whole medical service of the war will be carried on under the supervision of the Council of National Defence, a body created last August to secure the effective coördination of industry and material resources in the interests of national security and welfare The Council consists of the Secretaries of State for War, the Navy, the Interior, Agriculture, Commerce and Labour, assisted by an Advisory Commission (nominated by the Council) of seven civilians appointed by the Federal President Each member of the Commission appoints a committee or board representative of the activities for which he is responsible The medical representative is Dr Franklin H Martin, who presides over a committee the other members of which are Surgeon General William C Gorgas, U S Army Surgeon General William C Braisted, U S Navy, Surgeon General Rupert Blue, Public Health Service, Colonel Jefferson R Kean, Director General of Military Relief of the American Red Cross, Dr William H Welch, member of the National Council of Research, Dr William J Mayo chairman of the Committee of American Physicians for Medical Preparedness, Dr Frank F Simpson, chief of the Medical Section of the Council for National Defence and Secretary of the Committee of American Physicians for Preparedness This medical committee owes its inception early last year to the joint action of the American Medical Association, the American Surgical Association, the Congress of American Physicians and Surgeons, the Clinical Congress of Surgeons of North America, and the American College of Surgeons It has already done much excellent work, including the selection of some 20,000 medical men classified according to their training and the kind of work for which they are best fitted In order to facilitate the examination of recruits and release officers of the regular Army from such work a board of officers from the Medical Officers Reserve will be in session at the New York Academy of Medicine to examine candidates for the medical services and initiate them in the details of this work.

The preparatory work of organising and equipping base hospital units was taken in hand by the American Red Cross some months ago, and 22 units are now ready for service at any moment, while 7 others are on the point of completion Each hospital will contain 500 beds There have been enrolled 3000 trained nurses for active service and more than 1000 medical men, as well as over 4000 women with an elementary knowledge of first aid and hygiene, who will be able to assist the trained nurses The first naval base hospital stationed at Brooklyn is equipped for 250 beds and has been ordered to hold itself in readiness for active service

The Rockefeller Institute is experimenting with a portable military hospital unit with accommodation for 200 patients to be used as a surgical clinic It is proposed to place it in the charge of Dr Carrel and Dr Dakin to assist in the introduction of the methods of these surgeons as carried out in the French military hospitals

The War Refugees' Dispensary

The Committee of the War Refugees Dispensary, which has recently been closed, has sent in its final report to the War Refugees' Committee, of whose work it formed a branch and by which it was financed Instituted in October, 1914, by four English and three Belgian doctors, with the assistance of a Voluntary Aid Detachment, this dispensary continued its activities at 265 Strand, London, W C, as an out-patient department for refugees until early in the present year, when, owing to progressive difficulties both in staffing and financing it was closed and the work handed over to the Government Dispensary in Sheffield street, W C During the two and a quarter years of its existence nearly 29 000 consultations and treatments were given with a daily average of 52 attendances Medical cases predominated, but a considerable proportion of surgical, skin, nose throat, ear, and other affections were dealt with Patients to the number of over 400 requiring treatment beyond the scope of the dispensary were passed on to out-patient departments of suitable hospitals and 124 placed as in patients Besides this over 1200 introductions for ophthalmic treatment were given, and 420 pairs of spectacles supplied free or partially free Upwards of 1000 dental cases were treated by a private dentist, who most liberally and kindly placed his services at the disposal of the Committee, and nearly 500 received hospital treatment Artificial teeth and repairs free or assisted, were granted to 63 people, and in the same way nearly 600 surgical appliances have been provided. With a few exceptions medicines were dispensed on the premises, nearly 20,000 prescriptions having been made up at an average cost of 4½*d* each As the whole of the English staff and some of the Belgian gave their services free the dispensary was enabled to exist upon a comparatively modest income The premises were kindly lent free of rent for some months, and then at a reduced rate, drugs were latterly one of the heaviest items of expenditure, costing £240 during 1916 The total expenses of the dispensary for the 27 months of its existence barely exceeded £1800 An important branch of the work was that of providing doctors to visit refugees who were too ill to come to the dispensary In the earlier months there was a certain number of Belgian doctors available in London who could do this work, and when they were not available English practitioners visited the Belgian patients in their own neighbourhoods but in view of the general shortage of doctors the provision of domiciliary treatment was always attended with difficulty

The Training of the Disabled Soldier

Several weeks ago it was stated that the Ministry of Labour was collaborating with the War Pensions Statutory Committee in setting up Trade Advisory Committees, on which both employers and employed were to be represented, to deal with the training and employment of disabled men in various trades In Lancashire, where a county authority is dealing with the same question the movement has, up to the present, taken the form of collecting information from all the education authorities in the county with regard to the facilities which they would be able to offer for training men in various industries This information has been tabulated and will shortly be circulated to all the Local Pensions Committees for their use It is hoped that the whole of the cost will be met by the Pensions Ministry and that no education authority will hesitate to accept men from any part of the county

Medical Men of Military Age in Ireland —The Council of the Irish Medical Association have passed the following resolutions —

1 The Council of the Irish Medical Association consider that it is unfair and dangerous from a public health point of view for the authorities to refuse sanctioning temporary appointments of medical men of military age in the country where the services of men over military age cannot be procured

2. The Council of the Irish Medical Association consider that the military authorities are not consistent in their action in refusing to employ medical men over 50 years of age for foreign service although active and energetic and in some cases well known operating surgeons while they have given military home work to many men who are of military age

German Treatment of British Prisoners of War A Scottish Resolution —The Faculties of Medicine of the Scottish Universities, together with the Presidents and Councils of the Royal College of Surgeons of Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow, have issued a resolution recording—

> Their condemnation and detestation of the neglect and inhumanity which characterised the conduct of certain members of the Prussian medical staff to whom the treatment of British prisoners of war was entrusted especially in the internment camps at Wittenberg and Gardelegen during outbreaks of typhus fever which had been largely provoked by overcrowding insufficient food and entire absence of all sanitary measures The facts as stated in the recent reports of a British Government Committee which are based mainly on the testimony of officers of the Royal Army Medical Corps, themselves prisoners of war are of such a nature as to bring indelible disgrace upon the medical men concerned and upon the German Government, which remains ultimately responsible for the treatment meted out to prisoners of war As members of a profession which has hitherto in every quarter of the civilised world been inaccessible to the shameful influences which make for barbarity in warfare we are reluctantly forced to the conclusion that a spirit of gross inhumanity has not been absent from the Prussian Medical Service

New Military Hospitals —A Red Cross hospital is to be established on the Millbay recreation ground at Plymouth The hospital will contain 200 beds, in tents, and some adjacent buildings have been lent and will be used as dining and recreation buildings The work is nearly completed, the cost of the equipment is estimated at £1750 which is being raised by subscription. The medical men on the staff of the institution are Mr F Down and Dr G S Earl —Bigadon House Buckfastleigh, Devon was formally opened for the reception of patients on April 2nd The institution contains 50 beds and patients will be sent there from the American Women s Hospital at Paignton —The Hon Mrs Smyth has given Ashton Court, near Bristol, as a military hospital. It will accommodate 120 beds —The Torrington Voluntary Aid Hospital was recently formally opened It contains 10 wards with 65 beds, and an additional 10 beds could be provided, should the necessity arise —Colonel James Craig, M P, has placed his residence, Craigavon, at the disposal of the military authorities as a home for neurasthenic soldiers It will be worked in connexion with the Ulster Volunteer Force Hospital

RED CROSS GIFTS —More than £200,000 have been collected in the United Provinces of India for the provision of transport for the wounded by the Special War Fund inaugurated last year by Sir James Meston, Lieutenant-Governor of the United Provinces —The Imperial Order of the Daughters of the Empire, Illinois have sent a gift of £2000 and New Zealand has sent through the High Commissioner a sum of £963

Medical News.

SOCIETY OF APOTHECARIES OF LONDON —At examinations held recently the following candidates were successful —

Surgery —E W Diggett (Sections I & II) Philadelphia and London Hospital D E Bearn (Section I) Durham T F Reason (Sections I & II) St Mary's Hospital F A Unwin (Section I) Westminster Hospital and L J Vincent (Sections I & II) Cambridge and St Mary's Hospital.

Medicine —G W Coombes (Sections I & II) London Hospital F A Unwin (Section II) Westminster Hospital and C G G Winter (Sections I & II) St Mary's Hospital

Forensic Medicine.—G W Coombes London Hospital and W H A Pratt Guy's Hospital.

Midwifery —C A W Chapman Sheffield.

The Diploma of the Society was granted to the following candidate entitling him to practise medicine surgery and midwifery C G G Winter

THE LATE JAMES HENTHORN TODD CONNOR, M R C S L S.A.—The death of Mr J H. T Connor took place at 1 Mulberry walk, Chelsea, on April 16th at the age of 75 years He was the fourth son of Dr William Connor of New Wandsworth whom he succeeded in practice, and a nephew of Professor Robert Bentley Todd F R S He was educated at King's College School and Hospital, where he was dresser to Sir William Fergusson For many years he had an extensive general practice in New Wandsworth and its neighbourhood holding various public appointments, including that of medical officer to the Battersea Training College He leaves a wife and four children His eldest son is Mr Bentley Connor, whose portrait of the King has commanded attention

MEDICAL MAGISTRATE —Mr Charles George MacVicker B.A M B., B Ch B A O R U I has been placed on the commission of the peace for the county of Somerset.

THE LATE SIR JOHN HOWARD —The name of Sir John Howard the engineer philanthropist who died on April 20th in his eighty seventh year is perpetuated in Brighton by two benefactions—the Howard Convalescent Home at Black Rock which he built and endowed at a cost of £50 000 for ladies of limited means but which on the outbreak of the war was handed over to the War Office for wounded soldiers and a scheme for the building and endowing at an outlay of £30 000 of 24 cottages as cottage homes for incapacitated nurses in memory of Nurse Cavell He had previously founded the Howard Charity, which provides regular weekly assistance to a large number of old people

DONATIONS AND BEQUESTS —By will the late Mrs Sarah Clayton Dawson Upper Norwood S E, left £1000 each to the Convalescent Home Enys road Eastbourne and the London Homoeopathic Hospital and [illegible] to the Medical Missionary School in connexion with the Hospital —The late Miss Isabel Marion Briscoe of Codsall Staffordshire has left £500 each to the Wolverhampton and Staffordshire General Hospital and the Wolverhampton and District Hospital for Women £100 each to the [illegible] Hospital and the Brompton Consumption Hospital and [illegible] to the Wolverhampton district branch of the Queen Victoria Nursing Association —By will the late Mr Thomas Wharrie, of Eton-avenue, Hampstead, N W, has left £1000 each to the Royal Infirmary, Glasgow, the Western Infirmary, Glasgow, the Victoria Infirmary, Glasgow, the East Park Home for Infirm Children and the Higginbotham Sick Poor Nursing Association —The late Mr Ernest Penrose Arnold of Stilemans Godalming, has by will made a large bequest to the Children's Sanatorium at Holt Norfolk, or other sanatorium for the poor to be selected by his executors

THE LATE CHARLES SINCLAIR THOMPSON, M B, C M EDIN —Dr C S Thompson, consulting surgeon to Bideford Infirmary died at his residence, Bideford, Devon on April 9th The deceased, who succeeded his father had practised in Bideford and the district for over 40 years retiring from active work a year ago He was on the honorary surgical staff of the Bideford Infirmary and held appointments under the Bideford union for 35 years Dr Thompson, who was greatly respected in Bideford, leaves a widow and one son, a lieutenant in the Royal Engineers

Dr James Bertie Simpson has been appointed a deputy lieutenant of Sutherland

CENTENARIANS —Miss Charlotte Carlyon, who was born on Feb 16th, 1815 died at Truro recently Her cousin, Rev P Carlyon, died a few years ago at Falmouth in his 103rd year —Mrs Eleanor Plaistowe died recently at Highgate aged 102 years

THE LATE DR H. P POTTER —Henry Percy Potter M D Durh, F R C S Eng L S.A., D.P H Cantab, who for 37 years was medical superintendent of the Kensington Infirmary died on April 9th at the age of 63 years He received his medical education at St Thomas's Hospital and in Paris qualifying L S.A. in 1875 Three years later he obtained the F R C S Eng by examination and in 1893 he graduated M D at Durham University He was also a D.P H of Cambridge After holding house appointments at St Thomas s Hospital he took up the resident appointment at the Kensington Infirmary which he held until his death At one time he was president of the West London Medico-Chirurgical Society Dr Potter made several contributions to medical literature, the more important being a treatise on Gonorrhoeal Rheumatism, its Nature and Treatment published in 1878, and an account of the natural history of the "Voyage of the *Sunbeam*"

Parliamentary Intelligence.

HOUSE OF COMMONS

THURSDAY, APRIL 19TH

Health of Salonika Forces

Answering Mr DILLON who asked what precautions were being taken to safeguard the health of the Army in the neighbourhood of Salonika during the summer months, Mr BONAR LAW said I can assure the House that the Government are fully alive to the difficulties and dangers in connexion with this matter, and are taking all possible steps

Deaths at Kinmel Park Camp

Mr HAYDN JONES asked the Under Secretary for War what was the number of deaths amongst soldiers at Kinmel Park Camp, Rhyl for the months of February and March and the causes of such deaths —Mr MACPHERSON replied The answer is as follows —

February 1 officer 15 men: Pneumonia 7 bronchitis 4 pleurisy 2, motor accident 1 died at Abergele of syncope 1 found dead in quarters (an officer) 1 March: 1 officer 17 men Pneumonia 6, cerebro spinal meningitis 4 bronchitis 1 pneumococcal meningitis 1 meningitis 1 dilated heart 1 hemiplegia 1 cancer of stomach 1 under anæsthetic 1 bomb wounds (an officer) 1

Artificial Limbs for Disabled Soldiers

Replying to Major CHAPPLE Mr BARNES (Minister of Pensions) wrote A committee of experts exists for the purpose of advising as to the most suitable types of limbs for disabled soldiers, and as to the prices that should be paid for them If it advises that the prices asked by the manufacturers are excessive the question of a Government factory will be considered but the main consideration which I have in view is not the cheapness of the limb but its efficiency

Tuberculosis Treatment in County Meath

Mr P WHITE asked the Chief Secretary for Ireland why the application of the Meath county council for £347 10 (it being the only money received from the Treasury for the treatment of tuberculosis) had not been granted this year as similar estimates were since the passing of the National Health Insurance Act 1911 and whether the granting of the amount was recommended by the Local Government Board for Ireland —Mr DUKE wrote in reply

The Treasury decided not to sanction this grant on the advice of the Local Government Board for Ireland, with which the Irish Insurance Commissioners agreed, that the arrangements for the treatment of tuberculosis in county Meath were not satisfactory

MONDAY, APRIL 23RD

Calling up Medical Men

Mr **BROOKES** asked the Under Secretary for War whether, in order to prevent difficulties arising by the withdrawal of medical service in any area, Insurance Committees or other authorities responsible for the public health would be allowed a right of appeal against the recent order calling up medical men similar to that accorded to individuals — Mr **MACPHERSON** replied Each individual affected by the Military Service Acts has the right of appeal, and a medical man can appeal to a tribunal, who will refer his case to the Central Medical War Committee The procedure as to the action which an Insurance Committee or other authority may take is being discussed by the departments concerned

Venereal Disease Bill

Mr **HAYES FISHER** (Parliamentary Secretary to the Local Government Board) moved the second reading of the Venereal Disease Bill, the object of which is to prevent the treatment of venereal disease otherwise than by duly qualified medical practitioners and to control the supply of remedies therefor The Bill has already passed through the House of Lords[1] He said that the Bill was not a war measure It, however, had this connexion with the war, that as the Royal Commission on Venereal Diseases reported, and as experience showed, after war outbreaks of venereal disease were likely to occur to men in districts which had been comparatively free from it Although this Bill had been introduced he did not wish the House or the country to jump to the conclusion that there was any increase in this formidable disease Except in regard to the Army, the Navy, and the police, there were no statistics available to show the extent of the disease, but if the deaths due to syphilis were taken the evidence would lead to the conclusion that the disease was stationary, or at all events it was not increasing So far as the figures could be obtained, there was nothing to show that the ratio per 1000 in the Army had in any degree increased But it was not necessary to try to prove any increase in the prevalence of venereal disease in order to prove the case for the Bill Its prevalence was quite formidable enough In 1916 there were 36,500 cases treated in the London Lock Hospital alone, and these had increased from 23,074 cases in 1913 As a result of the report of the Royal Commission, Mr Long, when he was President of the Local Government Board, had circularised local authorities asking them to establish centres for the scientific diagnosis of the disease and for free and complete treatment Ninety nine out of the 145 local authorities who had been thus circularised had submitted schemes, and 61 of those schemes applying to a population of 19 millions had been approved

Mr **KING** How many of the schemes are in actual operation?

Mr **HAYES FISHER** Most of them are in operation Take the case of London He had only the figures relating to six hospitals for the first three months of this year, and in them 1195 males and 350 females had been treated as new patients It was remarkable in these times, when there was such pressure on hospitals and on the medical profession, that they had been able to submit practical schemes He had great hopes that these schemes would rapidly mature and that the results from them would be, perhaps not all that could be possibly expected, but would be very substantial in gradually diminishing the prevalence of these diseases The policy which was being adopted could be described as the maximum of persuasion with the minimum of penalty

Need for Legislation

Why, then, was legislation required? It was necessary as a complement to administrative action, and it would hasten the operation of that action A policy was wanted to persuade the victims of these diseases to abandon quack methods of treatment and go to the centres where they would get sound and scientific methods of treatment It was desirable to prevent the treatment of these diseases by methods which were specious, fallacious, and, indeed, pernicious The Bill prevented the treatment of the disease otherwise than by a duly qualified medical practitioner, or the dispensing of any remedy except on the prescription of a medical man Persons suffering from venereal diseases were a menace to the health of the community Although the Bill rested on persuasion of the sufferers to seek proper treatment that policy was retarded and hindered if they did not prevent quacks from carrying on their trade The liberty of the individual had constantly to give way to the safety of the State All statutes for the compulsory notification of infectious diseases interfered with the liberty of the individual, and this infringement of the liberties of the subject in this case was proposed to preserve the greater liberty of the community The Royal Commission had no hesitation in stating that the effects of the unqualified practice as regarded venereal disease were disastrous He was quite conscious of the limitations of the Bill, but in this campaign against venereal disease all forces—educational, moral, and spiritual—had to be brought to bear In passing the Bill Parliament would be providing the country with legislation which was ancillary to the policy of persuasion

Criticism of the Bill

Mr **KING** thought that the Bill should have been postponed until centres for free treatment were in operation in every part of the country He deprecated any step which would confer a monopoly on salvarsan treatment at this stage

Captain **GUEST**, whilst he supported the second reading considered that the Bill did not go far enough to cope with the magnitude of the evil caused by venereal diseases He went on to deal with the seriousness of these diseases in the Army The Under Secretary for War had stated recently that the ratio was 43 per 1000 But in the aggregate that meant a very large total Since the war began there had been admitted to hospitals in England over 70,000 cases of gonorrhœa, over 21 000 cases of syphilis, and over 6000 cases of soft chancre All these men might with few exceptions be regarded as unfit for further military use. He thought that it would be no exaggeration to say that during the course of the war between 40 000 and 50 000 cases of syphilis and between 150,000 and 200 000 cases of gonorrhœa had passed through the hospitals in France This showed how great was the magnitude of the evil and how ineffective were the proposals of the Bill for dealing with it In his view two measures were necessary—the removal of temptation to the soldier and the subjection of civilians to compulsory detention and cure

Sir **WILLIAM COLLINS** said that he could not help thinking that the legislative efforts of the Government had not been so fortunate as their administrative efforts He was not quite sure—although he entirely agreed that the practice of the quack in cases of venereal disease was most pernicious and objectionable and from every medical and surgical point of view to be condemned—that he desired adventitious protection for the profession against the kind of practice which ought to carry its own condemnation There was also the case of the tuberculosis quack and the cancer quack He was not at all sure that the tuberculosis quack was not more shameful than the quack with whom they were now concerned, and that the cancer quack was not worse than either If Parliament was going to put down unqualified practice at all, it would be better to put it down altogether rather than deal with this particular corner of it alone At the same time he wished to recognise that the practice of medicine, though a science, was not an exact science, but a progressive science, and a science which should look for new life from any quarter from which it might proceed The profession suffered rather than gained by association with the policeman and the gaoler in enforcing this prohibition, and he would rather see it rest on its own merits

Mr **GLYN-JONES** said that if the provisions of the Apothecaries Act were enforced against unqualified people who were to-day dealing with venereal disease nine-tenths of the evils which the present Bill was intended to hit would be removed These provisions were not enforced The Bill conferred on medical practitioners privileges which were not already possessed by them The Bill was confined to venereal diseases, and it provided that the treatment should for the first time by law be limited to the medical profession whilst allowing doctors, when treating other than insured persons to buy and sell for profit to their patients any drugs or appliances which they might require The pharmacists were not claiming too much when they said that if members of the medical profession were given the sole right to prescribe for patients who could not get treatment anywhere else the patients were driven to them, and the sole right carried with it the ability to usurp the functions of another profession and to make a profit out of buying and selling the remedies which were supplied to those patients

Mr **DILLON** considered that the Bill and the Criminal Law Amendment Bill were rather bad specimens of panic legislation In his opinion the way to deal with the subject would have been to go at it first from the moral and economic side, and also to have set up a Ministry of Health, the necessity for which, he rejoiced to observe, had at last dawned upon the people of this country

Sir H **GREENWOOD** spoke of the number of Canadian troops who had gone through hospital for venereal disease He hoped that steps would be taken to deal with such a situation, and that the Bill would go rapidly through the House of Commons It was an earnest effort to deal with a disease which was largely due to lax administration in the past

After some further consideration the Bill was read a second time

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[1] THE LANCET 1917 i 431

TUESDAY, APRIL 24TH.

Public Health Administration in Scotland

Mr MACCALLUM SCOTT asked the Secretary for Scotland whether the recent utterances of the President of the English Local Government Board with regard to the establishment of a Ministry of Health had any application to Scotland, whether he had had under consideration any proposals which would involve the local administration of public health in Scotland from the town and county councils which were at present charged with it and whether, before any such proposals were adopted he would afford ample opportunity for their discussion in the bodies affected —Mr MUNRO replied Although my noble friend's speeches have not referred to Scotland any proposals affecting the machinery of government in relation to public health and its administration, of course, interest Scotland as well as England I have received various suggestions in the matter which will receive my consideration It is clear that any proposals implying such a change as my honourable friend describes could only receive effect by means of legislation which would afford ample opportunity of discussion

Cocaine in Dentistry

Mr RAFFAN asked the Under Secretary for the Home Department whether it was proposed to extend the permit to unregistered practitioners in dentistry to use preparations containing not more than 1 per cent of cocaine for a further period upon its expiry on April 30th and, if so, to what date such extension would apply —Mr BRACE answered The existing exemption will be extended for a further period of three months, and an Order will be made accordingly

WEDNESDAY, APRIL 25TH

Public Health Legislation in Ireland

Mr ARTHUR SAMUELS asked the Chief Secretary for Ireland (1) whether, with a view to the better and more economical enforcement of regulations by the Local Government Board in regard to epidemic and infectious diseases in Ireland he would introduce a Bill extending the provisions of the Public Health (Prevention and Treatment of Disease) Act 1913 to Ireland and (2) whether having regard to the representations of the medical profession in Ireland and the desirability of securing skilled treatment in cases of child birth by properly qualified midwives, he would introduce a Bill for Ireland at an early date framed upon the lines of the English Midwives Act of 1902 and the Scotch Midwives Act of 1915 —Mr DUKE answered Bills have been drafted for the purposes mentioned in both these questions

Calling up Medical Men

Mr PRINGLE asked the Chancellor of the Exchequer whether notices had been issued to all medical men of military age to report themselves for service at 9 A.M on April 26th, whether the doctors so called up were to be required immediately to accept commissions and to be ready to join for service at 48 hours' notice on or after May 6th, whether in the case of doctors who refused to apply for commissions the recruiting officers were instructed to enlist them as privates in the R A.M C, whether in view of these instructions steps were being taken for securing that the essential needs of the civil community were met in order that a serious breakdown in the medical service might be averted —Mr BONAR LAW replied The calling up of these doctors is necessitated by the attacks on hospital ships, but the danger of the civil population being left without doctors is fully realised, and though all doctors of military age have been formally called up they will only be taken after consultation which is now taking place between the Local Government Board and the National Health Commissioners.

Mr PRINGLE Will the right honourable gentleman give an assurance that where a man is willing to accept a commission, even if he accepts it he will not be taken away without consultation with those authorities?—Mr BONAR LAW That is the substance of the answer I have given The whole subject is being considered from all these points of view

Sir W ESSEX Will the right honourable gentleman consider the subject of replacing these medical men by others who will be presently liberated from employment owing to the probable closing up of military hospitals in this country in consequence of the transference of patients?—Mr BONAR LAW The National Health Insurance Commissioners and the Local Government Board are fully alive to that, and realise that the problems can only be satisfactorily met if men over military age will undertake part of the duties

Commander WEDGWOOD Will the right honourable gentleman see that the Ministry of Munitions is also consulted on the question seeing that doctors are very important in connexion with the manufacture of gas and in connexion with steel works?—Mr BONAR LAW I can assure the House that the whole subject is being thoroughly gone into from the point of view of making the best use of the material available In the view of the Government and I am sure that it is the view of the House also the wounded must have the first claim

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL, Boscombe Branch.—House Surgeon. Salary £125 per annum and extras with board &c.

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum with board &c.

BURY INFIRMARY —Junior House Surgeon. Salary £150 per annum, with board &c

BURY AND DISTRICT JOINT HOSPITAL BOARD —Assistant to Medical Superintendent. Salary £250 per annum with board &c.

CAMBERWELL INFIRMARY Brunswick-square.—Two Locum Tenens Assistant Medical Officers. Salary £7 7s weekly each with board, &c.

CHESTER ROYAL INFIRMARY —Assistant House Surgeon Salary £150 per annum with board &c

DERBY DERBYSHIRE ROYAL INFIRMARY —Two House Surgeons Salary £200 per annum with board &c

GREENWICH UNION INFIRMARY AND WORKHOUSE.—Assistant Medical Officer unmarried. Salary £200 per annum, with apartments rations &c.

HARROGATE INFIRMARY —Resident House Surgeon

KENT COUNTY COUNCIL.—Tuberculosis Officer Salary at rate of £500 per annum

LEEDS PUBLIC DISPENSARY —Second Female Resident Medical Officer Salary £200 per annum, with board &c.

LEICESTER ROYAL INFIRMARY —Two Resident Surgical Officers. Salary £250 per annum with apartments &c.

LONDON TEMPERANCE HOSPITAL, Hampstead road N W —Temporary Anæsthetist two days a week for about two or three hours Salary 25 guineas per annum

MANCHESTER, ANCOATS HOSPITAL.—House Physician. Salary £200 per annum with board &c

MANCHESTER, BAGULEY SANATORIUM FOR TUBERCULOSIS.—First Assistant Medical Officer unmarried. Salary £350 per annum with board, &c.

MANCHESTER CITY OF —Temporary Assistant Tuberculosis Officer Salary £400 per annum

NOTTINGHAM CHILDREN'S HOSPITAL.—Female House Surgeon. Salary at rate of £200 per annum with board &c.

NOTTINGHAM CITY ASYLUM —Locum Tenens. Salary £7 7s per week with board &c.

NOTTINGHAM GENERAL HOSPITAL.—Two Assistant House Surgeons for six months Salary at rate of £250 per annum each board &c.

NOTTS COUNTY COUNCIL.—Second Assistant Tuberculosis Officer Salary £400 per annum.

PRESTON ROYAL INFIRMARY —Resident Medical and Surgical Officer Salary £120 per annum with board &c.

QUEEN'S HOSPITAL FOR CHILDREN Hackney road Bethnal Green.—Temporary Anæsthetist Salary £50 per annum.

RHONDDA URBAN DISTRICT COUNCIL.—Dental Surgeon Salary £300 per annum

ROCHESTER, ST BARTHOLOMEW'S HOSPITAL, Kent.—Senior Resident House Surgeon. Salary at rate of £300 per annum, with board &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon Salary £150 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY —House Physician. Salary £120 per annum with board &c.

SOUTH LONDON HOSPITAL FOR WOMEN South Side, Clapham Common S W —Female Anæsthetist on Tuesday afternoons. Salary 10s 6d per attendance.

WESTERN GENERAL DISPENSARY Marylebone-road N W —Honorary Ophthalmic Surgeon

WEST RIDING OF YORKSHIRE.—Two Temporary School Medical Inspectors. Salary £520 per annum.

Births, Marriages, and Deaths.

BIRTHS

LEWIS SMITH.—On April 18th, at Bank House, Pembroke Dock, the wife of Surgeon F Lewis Smith, R.N of a daughter

REYNOLDS —On April 4th, at Shameen, Canton, China, the wife of Dr W Graham Reynolds, of a son

WALTON —On April 23rd at Devonshire-street, W the wife of A. J Walton F.R.C S., of a son (still born)

MARRIAGES

CLEMENTS—JONES.—On April 17th at St. Hilary's Church, Wallasey Captain William Leitrim Clements, R.A.M.C., to Dorothy Melangell, only daughter of the late Rev Owen Jones Rector of Nantglyn Denbigh and niece of Mrs. W R. Roberts of Rolleston-drive Wallasey

CRAWFORD—JACKSON —On April 17th at Clones Parish Church Vincent James Crawford, D S O Lieutenant-Colonel R A M.C to Ellen Kathleen (Eileen) eldest daughter of the late Samuel K Jackson and Mrs. Jackson Cara, Clones, co. Monaghan.

DEATHS

MARTIN —Killed in action on April 9th Captain T W Martin R.A.M.C M O attached Royal Scots.

SADLER.—Killed in action on April 17th, Captain Vyvyan Kendall Sadler R.A.M.C aged 33

SCUDAMORE.—On April 17th after a short illness Lieutenant L. G Scudamore R.A.M.C

WEAVER.—Killed (the result of a riding accident) at Curragh Camp Ireland on April 20th while serving as Captain R.A.M.C John James Weaver M.R.C.S Eng., L.S.A., D P.H. Camb Medical Officer of Health for County Borough of Southport, elder son of the late James Weaver M D., of Southport, aged 56

N B.—*A fee of 5s is charged for the insertion of Notices of Births, Marriages and Deaths*

Notes, Short Comments, and Answers to Correspondents.

SALT IN THE DIET

Mr William Mugfur, of Colan, Cornwall, who is in his 100th year, and who is probably the oldest active farmer in England, recently informed a correspondent of the *Daily Express* that, in his belief, to eat plenty of salt was a good thing if one wanted to live to a good old age The use of salt in the diet has always been more or less a controversial matter In 1748 a scientific experimenter, Dr William Brownrigg, of Cumberland, published a valuable book on the Art of Making Common Salt In 1822 the author of the Art of Invigorating and Prolonging Life,' who disguised himself as The Author of 'The Cook's Oracle,'" but who is known to have been Dr William Kitchiner, famous for his dinner parties, stated in his quaint little book that—

> Salt is *aliorum condimentorum condimentum* and the most salubrious and easily obtainable relish which Nature has given us to give sapidity to other substances and has this advantage over all other Sauces that if taken to excess—it carries its remedy with it in its aperient quality He adds: We suspect that most mischief is done by the immoderate and constant use of the Common Condiments We have seen some puritanical folks who are for ever boasting that they never touch Made Dishes &c (one would suppose they had the Tongue of Pityllus) so be-devil every morsel they put into their Mouth—with Pepper and Mustard &c that they made their common food ten times more piquante—than the burn gullet Bonne Bouche of an eastern Nabob or a Broiled Devil enveloped in veritable Sauce d Enfer

Dr Kitchiner includes the following footnote explaining the allusion to the Tongue of Pityllus —

> This gentleman had so cold a Stomach (saith Suidas) that he made a sheath for his Tongue that he might swallow down his Pottage scalding hot, yea I myself have known a Shropshire Gentleman of the like quality " (This footnote seems to have been extracted from Dr Muffett on Food, 4to 1655 p 237)

In 1699 England imposed a duty on salt which was revived on the motion of Sir Robert Walpole in February, 1732, increased to 15*s* a bushel in 1805, reduced to 2*s* in 1823, and abolished in 1825 Salt for the fisheries was free of duty In the "eighties" there arose again a good deal of controversy in this country as to the injuriousness of eating common salt and a book on the History of Salt was published in 1881 by Mr E M Boddy, F R C S, to uphold the eating of salt, but some of his arguments in its favour were thought by reviewers to be too enthusiastic However, in 1883 THE LANCET referred editorially to the popular statements as to the injuriousness of common salt and commended its judicious use Books condemning the use of salt have also been published by industrious compilers of public opinion on the subject Salt and saltless diets have been both recommended with some amount of strenuousness, but Dr Kitchiner's quotation from Colman may be referred to here —

> ' Man differs more from Man
> Than Man from Beast.

In THE LANCET of 1907, under the title of "Chloride of Sodium in Heart Disease, we quoted the opinion of an author who asserted that the average individual consumed far too much salt, and we then said that—

> ' Many people imagine that salt is a prophylactic against ill health and that they cannot well consume too much of it With delicate people however, the habitual ingestion of more salt than is required by the system is sure to produce ill effects The amount of salt that can be consumed daily with safety depends upon the constitution of the individual "

Years ago medicinal treatment was tried by many medical men of administering sodium chloride in cholera, phthisis, typhoid and other fevers, and in parasitical diseases The most favourable results seem to have been obtained in the treatment of fevers by administering graduated doses In more recent times common salt is claimed to be beneficial in leprosy, but deleterious in epilepsy and in diseases of the kidney In 1902 THE LANCET commented on the question whether 80 grains of salt per gallon in potable waters and for domestic supply purposes was objectionable On the whole the idea that salt prolongs life is a fallacy, but the opposite view is sure to be held by not a few who studiously avoid it as an addition to diet

THE DRINK QUESTION

IN common with other countries England has been compelled to safeguard the efficiency of its army by the drastic regulation of the sale of intoxicants The two burning questions of the moment, State purchase and the nationalisation of the liquor traffic, are discussed in *The Alliance Year Book and Temperance Reformers' Handbook for 1917* (edited by G B Wilson, B A Lond, Howard Medalist, Royal Statistical Society, published in London and Manchester by the United Kingdom Alliance, price 1*s* net) by the Rev Principal Denney, D D, and Mr Edward Wood, J P, respectively The editor contributes an article on Alcoholic Liquors and Foodstuffs, while short notes deal with the food supply of the United Kingdom, prohibition, and the liquor trade finance Figures and diagrams supplement a formidable array of facts

A KIDNEY AND ABDOMINAL PROTECTOR

Dr John Campbell, of Belfast, has called our attention to a garment to protect the lower part of the trunk designed by Lady Angela Adair, of Dunsdry, Co Antrim, and consisting of a shaped band of flannel about 36 inches long and 12 inches wide at the waist, with a narrower band passing between the thighs, which can be readily adjusted The designer believes that the protector will prove useful in preventing exposure to cold, and that it will add to the comfort and health of those who wear it The makers are *Messrs Robert McBride and Co, of 20, Alfred street, Belfast*

ECONOMY IN RUBBER GLOVES

Messrs W & A. Bates, Limited, of St Mary's Mills, Leicester have written with reference to the letters which have appeared on this subject, and have sent us some actual figures of the saving effected by some of the hospitals which send their damaged gloves to be repaired by the electric vulcaniser

—	Gloves repaired during 12 months	Cost of repairs.
		£ s d
London Hospital Whitechapel road ..	1281	18 7 3
1st Eastern General Hospital, Cambridge	1741	28 4 0
War Hospital Croydon ..	864	15 3 2
District Infirmary Ashton under Lyne	563	10 2 6
3rd London General Hospital, R A M C, Wandsworth ...	593	9 0 10
Queen's Hospital Birmingham	950	17 8 6

Total gloves repaired during 12 months	Total cost of repairs	Cost of same number of new gloves at an average price of 2*s* per pair	"Apparent" or maximum saving effected.
6042	£98 6*s* 3*d*	£302 2*s* 0*d*	£203 15*s* 9*d*

Hospitals which send all their damaged and worn-out gloves to this firm for repair receive scrap prices for any gloves which are considered to be past repair

"MONKEY" NUTS AS A FOOD

To the Editor of THE LANCET

SIR,—There seems to be now an increased sale of "monkey" nuts, and I observe that the price, which in peace time was 1*d* a pint, has now reached 3*d* a pint in some places I bought a pint of these nuts and found that in the shells they weighed 5 oz and the yield weighed 3¼ oz At 3*d* a pint this equals 1*s* 3*d* per pound for the "nuts," and at 2*d* a pint equals 10*d* a pound In some places they are sold at 6*d* a pound shelled I ground up the seeds, of which there are one, two, or three in the shell, in a mincer, and mixed the minced nuts with an equal quantity of flour and a little sugar and baked as a flat cake I have come to the conclusion that 1 part of nuts to 3 parts of flour would have been better, as the cake was too oily and rich and produced in three people a slight feeling of nausea and a desire to drink half a pint of water immediately I have also eaten the peanuts unbaked and experienced the same urgent desire to drink I remember seeing installed on the counter in London licensed victuallers' establishments a few years ago what were, I believe, American machines like urns for supplying by a penny in the slot arrangement a small quantity of these "nuts" shelled There seems to have been method in this attention paid to customers In grinding up the nuts a moderate quantity of clear thin oil is obtained, something like olive oil I learn that this arachis oil is used in the East instead of olive oil in cooking and for making ointments, liniments, and plasters, and as a substitute for cod liver oil The name *Arachis hypogæa*, which is interpreted as "without a backbone" and "under the earth," refers to the strange power of the plant of forcing the fruit or pods as they increase in size into the earth, where they ripen their seeds, thus accounting for the English names of pea-nut" ground nut" and 'earth nut," and sometimes "underground kidney bean The shells, when ground up in a small mill or mincer, make a very light-weight dry bran like substance, which answers well for stuffing cushions instead of bran I have seen public places strewn with monkey nut shells, but they could be made use of in this

When immersed in boiling water some of the ground shell sinks and some floats, but it does not dissolve

I am, Sir, yours faithfully,
OBSERVER

London April 16th 1917

* Another South American name for the "monkey" nut is Cacahuate, which evidently accounts for the common French names of "Cacahuète and "Cacahuate,' although other French names are Arachide" and "Pistache de terre" The German names are Erdnuss," and for the oil Katjangöl, evidently a corruption of the East Indian Katchung oil It is also claimed that from these oily nuts a kind of inferior chocolate may be made, the oil, however, is said not to keep" well, but soon to become rancid

In a recent handbook on Brazil by J C Oakenfull is the following paragraph —

> Pea nuts (*Amendoim*) These kernels yield 50 per cent of oil and the shells contain 85 48 per cent. of cellulose The residue of the crushed nuts forms an excellent feeding cake for cattle containing more than 31 per cent of albuminoids 11 per cent. of oil, and 31 per cent. of starch and saccharine matter The plant thrives only in a limestone district or in soils where an abundance of calcareous matter has been added It should be planted in rotation with tubers or maize. In favourable circumstances 2½ tons of nuts to the acre is not an out-of the-way crop

—ED L

' MEDICAL PRACTITIONERS AND IMPERFECT OPERATIONS "

UNDER the above heading the *Western Morning News* has quoted recently the report of Mr J F Fry, in reference to tonsils and adenoids in the Exeter division, presented by him to the Devon Education Committee —

> I am convinced that the school medical inspector should, with regard to all defects only send notices to parents in those cases where the deficit is so very marked that the medical attendant cannot do otherwise than endorse the verdict. There is an undoubted disinclination on the part of many practitioners to fall foul of the school medical inspector if possible In four or five instances parents complained that my promise was not fulfilled as their children had not benefited by the operation, and the result was that all other cases refused treatment in those places. Examination showed that the local practitioner in one case had taken a small slice of the tonsil in another had removed one tonsil only and had not touched the adenoids The moral is, that while some general practitioners remove tonsils and adenoids as well as a specialist, it would be wiser that all cases should be treated by a skilled operator and I think that all ought to go to hospital

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I M S (P & O S N Co) is thanked for his communication but has omitted to enclose his card

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Medical Diary for the ensuing Week.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W

MEETINGS OF SECTIONS

Thursday, May 3rd.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—H Russell Andrews T G Stevens): at 8 P.M

Annual General Meeting—Election of Officers and Council for Session 1917-1918

Specimens

Mr Gordon Ley: Spontaneous Rupture of Uterus

Mr T G Stevens: Decidual Reaction in a Polypus

Short Communication

Mr Gordon Ley: Decidual Reaction in a Uterine Fibroid.

Papers

Mr J D Malcolm: Post-operative Tympanites: its Nature and Some Points in its Treatment.

Dr Cuthbert Lockyer: Ovarian Pregnancy

Friday May 4th.

LARYNGOLOGY (Hon. Secretaries—Cecil I Graham Frank A Rose) at 4 P.M

Annual General Meeting—Election of Officers and Council for Session 1917-1918

Cases and Specimens

Mr Mark Hovell: (1) The Treatment of Irritative Coughing (2) Retainers of Tracheotomy Tubes

Mr L D D Davis: Two Cases of Optic Neuritis caused by Nasal Disease

Mr G W Dawson: (1) Naso pharyngeal Fibroma (2) Adherent Palate: (3) Congenital Atresia Naris

Dr Watson Williams: Recent Methods of Nasal Diagnosis illustrated

Mr W M Mollison: (1) Osteomyelitis of Frontal Bone (2) Carcinoma Maxillæ after Operation

Dr Donelan: Specimen of Epithelioma removed from the Vocal Cord

Mr Tilley: Skiagram of Pituitary Fossa and Notes upon Removal of New Growth

Dr Dan McKenzie: Spasmodic Stricture of Thoracic Œsophagus Skiagrams

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RÖNTGEN SOCIETY at the Cancer Hospital (Free) Fulham road S W

TUESDAY —8.15 P M General Meeting Adjourned Discussion on the Future of the British X Ray Industry (continued by Capt T Holland (President)) Mr A S Esslemont Dr J Metcalfe Mr P J Neate Mr F W Higgins Mr W R Bullmore Mr A L Dean Mr B H Murphy Mr W E Schall Mr J H Webb, Mr H C Head and Dr R Knox will take part in the discussion.

ROYAL SOCIETY OF ARTS John-street, Adelphi W C

WEDNESDAY —4 30 P M., Paper :—Mr J C Shenstone: Herb-Growing in the British Empire: its Past, Present, and Future

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith road, W

FRIDAY —8 30 P M Meeting

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON Pall Mall East.

TUESDAY AND THURSDAY —5 P.M. Oliver-Sharpey Lectures —Dr C Bolton Observations on the Pathology of Cardiac Dropsy

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn Fields, W C

Museum Demonstrations (Pathology) for Medical Students and Practitioners and First Aid and Ambulance Students —

MONDAY —5 P M., Mr S G Shattock: Gunshot Injuries

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road W

MONDAY —2 P M. Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY —2 P.M., Medical and Surgical Clinics. X Rays Mr. Baldwin: Operations Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

WEDNESDAY —10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose and Ear 2 P.M. Medical and Surgical Clinics X Rays Mr Pardoe Operations

THURSDAY —2 P.M Medical and Surgical Clinics. X Rays Mr Gray: Operations. Mr B Harman: Diseases of the Eye.

FRIDAY —10 A.M, Dr Simson: Gynæcological Operations 2 P.M. Medical and Surgical Clinics X Rays Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M Dr Saunders Diseases of Children Dr Banks Davis: Operations of the Throat, Nose, and Ear Mr B Harman. Eye Operations 2 P M., Medical and Surgical Clinics X Rays Mr Pardoe: Operations

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly W

TUESDAY —3 P M, Prof C S Sherrington Tetanus: its Prevention, Symptoms and Treatment. (Lecture I) 5 P M., Annual Meeting

ROYAL INSTITUTE OF PUBLIC HEALTH, Lecture Hall of the Institute 37 Russell-square W C 1

Course of Lectures and Discussions on Public Health Problems under War and After war Conditions:—

WEDNESDAY —4 P M Lecture III :—Dr C W Saleeby Imperial Health and the Dysgenics of War Followed by a discussion

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METEOROLOGICAL READINGS

(*Taken daily at 8.30 a m. by Steward's Instruments*)

THE LANCET Office April 25th 1917

Date.	Rain fall.	Solar Radio in Vacuo	Maximum Temp Shade	Min. Tem	Wet Bulb	Dry Bulb	Remarks
April 19	..	92	61	45	49	50	Overcast
" 20		97	57	42	44	48	Fine
" 21		73	53	47	48	50	Overcast
" 22		81	52	38	44	49	Cloudy
" 23		94	56	41	40	43	Cloudy
" 24		91	60	36	39	42	Fine
" 25		85	53	42	45	47	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

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The following journals, magazines &c. have been received — Albany Medical Annals Revista Odontologica, Medical Review Journal of the Royal Naval Medical Service Public Health Cleveland Medical Journal Journal of Nervous and Mental Disease American Journal of Orthopedic Surgery British Journal of Dental Science Surgery Gynecology and Obstetrics Journal of Laryngology Rhinology and Otology American Journal of Medical Sciences Eugenics Review American Journal of Roentgenology American Journal of Public Health Journal of Comparative Pathology and Therapeutics Annales de l Institut Pasteur Tropical Diseases Bulletin Canadian Journal of Medicine and Surgery Midland Medical Journal Calcutta Medical Journal Medical Journal of South Africa, Bulletins et Memoires de la Societe Medicale des Hôpitaux Proceedings of the Royal Society of Medicine British Dental Journal &c

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

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THE
Milroy Lectures
ON
MEAT INSPECTION,
WITH SPECIAL REFERENCE TO THE DEVELOPMENTS OF RECENT YEARS

Delivered before the Royal College of Physicians of London

BY WILLIAM J HOWARTH, M D MANCH., D P H.,
MEDICAL OFFICER OF HEALTH, CITY OF LONDON

LECTURE II[1]

THE COURSES OF INFECTION IN CATTLE.

MR. PRESIDENT AND GENTLEMEN,—The terms "localised" and "generalised" are used in meat inspection in connexion with the distribution of tuberculous lesions They are, however, not entirely satisfactory, for if they are strictly interpreted they are not of sufficient significance and, on the other hand, if they are given an extended meaning confusion may result. I prefer to use the words primary and secondary lesions and assume that primary lesions are always found in situations which admit of infection having been received from outside the body—e g , the lungs, mesenteric and cervical glands, the external genital organs and local inoculations The secondary lesions are extensions from the primary lesions from which latter the infection is conveyed by way of (*a*) the various tracts of the body, such as the respiratory or digestive tract , (*b*) the lymphatic system , (*c*) the venous blood stream , and (*d*) the arterial blood stream. In arriving at a decision as to the action which should be taken in any particular case I endeavour to locate the primary lesion and to decide along which course the infection causing the secondary lesions has passed It is not always possible to arrive at a definite decision, but in cases of doubt the more serious of the alternatives is the one accepted

In the bovine, the seat of the primary lesion varies with the age of the animal In calves of four or five weeks old tuberculosis is not common, but it is by no means infrequent and such cases as I have seen have been mostly of the congenital type In these cases the primary lesion is to be sought in the maternal system and the secondary lesions are distributed to the calf by the maternal arterial blood The cases which are not congenital among these very young animals are of the ingestion type, in which early lesions are found in the mesenteric glands and less frequently in the cervical glands or both. These cases also are not numerous At a little older age but with very few instances under ten weeks the regular type of cattle primary pulmonary is met with whilst at a still older age the primary ingestion cases diminish in numbers and the pulmonary type is almost the only one observed.

The course of infection can be followed with certainty by observing the lesions in very young animals These with few exceptions are not killed on account of illness but in the course of preparation for human food and thus early unsuspected cases come under observation

CONGENITAL TUBERCULOSIS

In the fœtal circulation the arterial blood passes mainly through the abdominal organs Very little reaches the lungs, and that only at a later stage in the circulation The obvious deduction is that in such circumstances blood charged with infection will mainly affect the liver spleen, and kidney and the lungs little if at all No primary lesion is observed and all lesions are of the miliary type In addition, the size of the lesions varies in groups indicating different stages of growth due to release of infection at different times As regards extent of infection the mesenteric glands show no deposits the greatest number of centres are in the liver the kidneys show the fewest and the spleen a number intermediate between the two The kidneys sometimes escape so far as may be judged by careful macroscopic search When slaughtered at the age of four weeks the largest lesions may be about a quarter of an inch or even more in diameter in the liver and spleen, but rather less in the kidney There are often many minute spots observed in the liver which appear to suggest a very recent dissemination. These minute spots are not so easily seen on the spleen owing to the nature of the covering , they are seen in fewer numbers occasionally on the surface of the kidney This later dissemination may have passed through the lungs into the arterial stream, as the lungs often show early centres of infection of the miliary type These latter are small, many are subpleural, and in that situation are about an eighth of an inch in diameter, translucent, and obviously tubercles much younger in age than the earlier ones in the abdominal organs Their origin appears to be due to lymph infection conveyed from the abdominal organs and the related lymphatic glands after birth They reach the lung either by direct entrance into an eroded vein in the affected organ or lymph gland, or by infected lymph which reaches the blood stream by way of the main lymph tract From the lungs the infection is carried in the arterial blood to the system generally If the dose of infection has been severe, lesions will be found in the lymph glands of the carcass, most often the external inguinal and prescapular

This represents the course of events in the congenital cases If the calf is not slaughtered till a later age, all the lesions develop and auto infection may set up lesions in the mesenteric and perhaps cervical glands, and so a stage arrives when it becomes impossible to differentiate the case with certainty from one of primary intestinal origin with later dissemination. (This would not really matter to the meat inspector as regards his decision, since the distribution would be sufficient to require condemnation)

ACQUIRED TUBERCULOSIS

In calves up to the age of 10 weeks the abdominal type, although not common, is more frequently observed than the pulmonary This observation does not agree with the experience of Chaussé The primary lesion is more generally found in the mesenteric glands than the cervical Sometimes a double infection is noted

Abdominal Type

The mesenteric glands may be affected alone, but the liver soon shows miliary lesions and the portal gland becomes affected The infection is conveyed to the liver by radicles of the portal vein. Further development results in miliary deposits in the lungs conveyed by the venous blood stream in the manner already described The next advance is infection of the arterial stream by way of the lungs, resulting in secondary deposits in liver, kidneys, and systemic lymph glands and perhaps spleen All or only some of these may show lesions

Cervical Type

The cervical glands may show infection alone Later, miliary tubercles may be found in the lungs due again to venous blood infection Subsequent development follows infection of the arterial blood stream with results as in the last example

Double Primary Infection of Cervical and Mesenteric Glands

In this instance the only difficulty is the decision whether the liver lesions are due in part to secondary infection by way of the arterial blood, or whether they entirely arise from infection conveyed by the portal system. If from the arterial system lesions indicating at least two different ages may be observed, and the fact is rendered decisive if lesions are in addition found in the kidney, systemic lymphatic glands, or spleen.

Pulmonary Primary Lesions

This is by far the most common form of invasion of cattle by tuberculosis The development of the disease is easily followed. The lungs may show a primary lesion without macroscopic evidence of tubercle in any other organs, but extension soon occurs and the following possibilities are to be noted 1. Extension of the disease by the lymphatic tract to the glands in the mediastinum 2 Auto-infection by swallowing infected sputum which may give rise to lesions in the mesenteric glands or in one or other of the cervical glands 3 Infection of the arterial blood stream by way of the pulmonary artery and the left side of the heart 4 Extension of the primary lesion by the development of tubercles around the periphery of the primary lesion There may be more than one primary lesion observed in the lungs A few observations are desirable respecting these groups

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[1] Lecture I was published in THE LANCET of Aug. 4th, 1917, p. 147

1. *Development by the lymphatic system*,—One or more of the mediastinal and bronchial glands soon become infected from the lungs, and they at a later stage may infect the venous blood stream in the manner already stated In this manner the lungs become infected secondarily with miliary tubercles in addition to their being the seat of the primary lesion

The bronchial and mediastinal glands appear to have a direct relationship with the pleural cavity Possibly this space is lubricated with lymph supplied by these glands and they may likewise drain off excess If that be the case it would account for the frequency of tuberculosis of the pleura which is often seen in considerable amount in relatively early cases of tuberculosis The remarkable extent of infection in the pleura is probably the result of friction since the lubricating medium in an infected state is passed backwards and forwards over the pleural surface It is interesting to note that pleural tuberculosis is a late manifestation in pigs, which is what one expect seeing that the origin in pigs is generally due to ingestion The comparative line of development in the bovine and porcine is—

Ox		*Pig*	
Lungs (primary)		Cervical or mesenteric gland (primary)	
Mediastinal *glands*	Lymphatic extension	Lungs (miliary) extension by the blood stream	
Pleura		Mediastinal glands Pleura	Lymphatic extension via the lungs generally but infection may have been conveyed by the blood stream

In the ox the disease has frequently not extended by the blood stream at the time of pleural attack, but in the pig it has, thus the lung affection following cervical infection would be of the miliary type, and so probably tuberculosis of the type disseminated by the arterial blood stream would be developing at the same time as the pleural lesion Pleural lesions in the pig in cases not of primary pulmonary origin are, therefore, nearly always associated with dissemination

The extension from the pleura is to the subdorsal and suprasternal lymph glands with possible future increase of infected material passed into the venous blood channel and so increasing the lung affection

(2) *Auto infection from the lungs* would result in development of either mesenteric or cervical lesions with subsequent development as already suggested In this connexion it is only necessary to state that, as in the case of the pleura and the mediastinal glands, the peritoneal cavity appears to be related to the mesenteric glands, and infection of the cavity may follow infection of these glands and the extra ordinary development of the disease may likewise also be due to friction

(3) and (4) *Development by way of the arterial system and extension of tubercles round the primary lesion* —The tendency of tuberculosis in cattle is towards the establishment of a chronic condition rather than an acute This shows itself in the formation of a fibrous tissue delimiting membrane around the primary lesion and degenerative processes in the material enclosed, which often becomes caseous and calcified This enclosing tissue would appear to prevent much extension by way of the arterial system from the average primary lesion Occasionally there must be an escape, but not always enough to set up a lesion in other organs, though at times even this happens, but dissemination in such cases would generally be slight in amount On the other hand, tubercles may develop as a result of infective particles from other centres forming emboli in the lung capillaries There is more probability of escape of infection into the arterial blood supply at the time the emboli form in the lung than during the later growth of the tuberculous foci and therefore miliary tubercles in the lungs are more likely to be associated with dissemination by the arterial system than are primary centres Primary centres, however, may take on more acute development and tubercles may develop at the periphery The risk of dissemination in such cases is probably equal to that of the growing embolic centres but less than results from the original release of infection which gave rise to miliary lesions The risk, however, is greater than is observed in the chronic type of primary lesion Miliary tuberculosis of the lungs is therefore the condition which most frequently renders a whole carcass unfit for human consumption, acute primary lesions with evidence of recent active growth are next in importance, and chronic primary lesions of least importance

It does not always follow that the dose of infection which sets up miliary tuberculosis in the lungs is sufficient also to set up lesions in the organs beyond There is some general relationship between the extent of pulmonary deposit and probability of deposit in other organs If the animal lives for some time after the infection has escaped into the blood stream growth of the lesions in both lungs and organs will continue, and at the inspection the probability of simultaneous infection can be ascertained From the meat inspection point of view, therefore, account requires to be taken of the age of the miliary deposit in the lungs, and the extent. Early deposits must be regarded as dangerous, whilst in older cases the actual location of the lesions becomes a [illegible] more decisive factor In recent cases, if the lesions are limited to one organ beyond the lungs there seems to be very little risk in passing the carcass, and if two organs are involved but the deposits are old and not numerous the same deduction appears to me to be justifiable In cases where doubt arises [illegible] examination of the glands of the carcass assists in the decision.

The organs affected by the arterial blood [illegible] the liver (not forgetting the possibility [illegible] infection), the spleen, the kidneys, the internal genital organs, the bones, joints, and muscles The glands which may be affected in arterial extension are mainly the prescapular, the precrural the external inguinal or supra mammary, the popliteal, and probably the ischiatic (this is never examined) Although infection of these lymphatic glands is generally indicative of arterial dissemination, the possibility of inoculation tuberculosis should not be overlooked In these cases infection of the gland may arise by way of the lymph stream, and the position is that of a localised infection Instances of this are not frequent in meat inspection work

CONSIDERATION OF THE RECOMMENDATIONS OF THE ROYAL COMMISSION RESPECTING THE CONDEMNATION OF TUBERCULOUS CARCASSES

The recommendations of the Royal Commission so far as they relate to tuberculosis observed in the carcasses of cattle may be considered in detail at this point

The Entire Carcass and all the Organs may be Seized

1 *When there is miliary tuberculosis of both lungs* —Miliary tuberculosis does not arise as a primary manifestation, nor does miliary tuberculosis, except on rare occasions, affect one lung only It is an incident in the development of a primary lesion which has formed in one of the positions already stated The new tubercles around an actively growing primary lesion in the lungs are not embolic in origin and therefore do not give rise to the same risk of dissemination by the arterial blood stream, as do lesions of the embolic type Miliary tuberculosis of the lungs results from infection of the venous blood stream, and is the most serious lesion in tuberculous carcasses but for reasons stated this recommendation seems too exacting, as I believe some carcasses so affected may be saved

2 *When tuberculous lesions are present on both the pleura and peritoneum* —Lesions so situate are no proof that the infection has either been conveyed by the arterial or venous, blood supplies They may, in my opinion, be entirely lymphatic in origin, as already described In general the rule as it stands is sound, owing to the extensive character of the lesions making it impossible to remove the affected tissue, to the consequent effect on the system generally, and to the probability of many lymph glands being implicated, rendering complete investigation a matter of considerable difficulty Nothing however, is said in the recommendations respecting affections of one or other serous surface separately They are, in my experience, not affected without other associated lesions—that is the pleura without one or more of the lymphatic glands in the mediastinal space and the peritoneum without an associated lesion in the mesenteric glands Probably one serous surface may also be affected by the other by directly intercommunicating lymph channels on the diaphragm, or the pleura from the peritoneum by the roundabout way of the posterior mediastinal gland which receives lymph from some part of the upper surface of the liver

In the case of affections of the pleura I am of opinion that total destruction of the forequarter is not necessary in every case Provided the lesion on the parietal pleura is single, of limited extent, say not more than the size of the palm of the hand in area and the subdorsal and suprasternal glands show no signs of infection, I think it would suffice to remove the part of the chest wall on which the lesion is located together with a fair margin extending beyond , in addition the remaining parietal pleura should be stripped, but this should only be done under the immediate supervision of an inspector In those cases where the lesions are multiple and extensive and the glands affected, the whole affected forequarter should be condemned In the case of the peritoneum a similar limited localisation should be dealt with by wide removal of that part of the abdominal wall which is affected In more extended cases condemnation of the hindquarters is called for In either of these instances if there is evidence of extension by the arterial blood stream as shown by affection of certain lymph glands, the whole carcass should be condemned The lungs and associated glands should invariably be condemned if the pleura is affected, and the intestines and mesentery in the case of the peritoneum

3 *When tuberculous lesions are present in the muscular system or in the lymphatic glands embedded in or between the muscles.*—The obvious intention here is to prevent the sale of meat which has been affected by the arterial blood stream Lesions of the muscular tissue are rare. It is generally assumed that the lymph removes whatever infection may reach the muscle, and that the glands draining these areas will develop the tuberculous lesion A lesion in the muscular tissue, excluding the rare condition of direct extension from a lesion in some other tissue, indicates infection by the arterial blood supply , similar significance attaches to lesions of bones, joints, and sexual organs, and also infection of the spleen and kidney

It would be better definitely to state the glands the affection of which is regarded as being of sufficient importance to justify condemnation of a whole carcass The term "embedded" in or between muscles is not precise. It might be argued with some show of reason that some of the cervical, prepectoral, suprasternal, subdorsal, and certain glands of the hindquarter are embedded in muscle, but the significance of their being affected is not so great as to justify total condemnation The glands having the importance which is suggested should be limited to those already enumerated

4 *When tuberculous lesions exist in any part of an emaciated carcass*—This recommendation is obviously sound. Emaciation always calls for condemnation whatever the disease which gives rise to the emaciation

No reference is made in the regulations to the requirement of condemnation in cases of associated infection of septic origin This condition is more generally found in connexion with primary lesions, and the chief point for consideration is size, in association with acuteness of symptoms, both local and general In acute cases insufficient delimitating membrane may exist which allows of extensive absorption , this gives rise to feverish symptoms or those of toxæmia evidence of which is found in colour and smell and setting of the meat and possibly in the lymphatic glands These cases are considered from the ordinary standpoint of septic infection, with the additional factor that it is superimposed on a tuberculous lesion

The Carcass, if otherwise Healthy, shall not be Condemned, but every Part of it containing Tuberculous Lesions shall be Seized

1 *When the lesions are confined to the lungs and lymphatic glands*—No exception can be taken to this recommendation It is only necessary to remember that when miliary lesions have become associated with the primary lesion condemnation of the whole carcass may become necessary, but this is provided for by a separate recommendation Certain acute primary lesions and complications such as large abscesses may call for condemnation of carcasses

2. *When the lesions are confined to the liver*—They are practically never confined to the liver,[1] the portal gland is soon affected and the mesenteric glands are usually infected in cases where the arterial blood supply has not conveyed the infection In this latter instance the lungs would generally show infection and thus transfer the case to another group If the glands as suggested are included, the advice would be acceptable

3 *When the lesions are confined to the pharyngeal gland*—It is not a very infrequent occurrence for bovine animals to show tuberculous lesions alone in these glands and when affected they are generally evidence of infection by feeding and in young stock. In these instances condemnation of the parts drained by such glands would meet the case

4 *When the lesions are confined to any combination of the foregoing but relatively small in amount*—The combinations are as follows —

(*a*) Tuberculosis of the pharyngeal glands with pulmonary lesions These latter may be primary or secondary If primary the recommendation is sound, but if secondary the lung lesions will be of the miliary type, and the case thus transferred to another group for decision Additional combinations occur later according to the distribution by the arterial system

(*b*) A primary lesion in the lungs with embolic foci in the liver In this case the primary lesion in the lungs may be of the chronic type and the liver lesions single or few, in which case the rule would be sound On the other hand, the lung lesion may be acute, which would require greater significance to be paid to liver lesions and indicate the necessity for careful decision If the primary lesion was such as to suggest that escapes of infection into the arterial stream might be frequent, condemnation would be necessary

(*c*) Embolic foci in the liver (regarded as an extension from a primary lesion in the mesenteric glands) with secondary deposits in the lungs These latter would transfer the case to the miliary group for classification.

(*d*) Lesions in the mesenteric glands and liver, together with lesions in the pharyngeal glands—an unusual combination as a primary condition If there is extension to the lungs either from the abdominal or cervical lesions the classification would again be that of miliary tuberculosis, but with lungs free the recommendation is acceptable, as there would be no evidence of infection having passed the lungs

SUGGESTED COURSE OF ACTION WHICH SHOULD BE TAKEN IN CASES OF BOVINE TUBERCULOSIS

Congenital Tuberculosis

The carcasses of calves showing congenital lesions should be condemned together with all organs

Note—Congenital cases may not be recognisable as such if the animals are several months old when slaughtered owing to the considerable development of secondary lesions which makes it impossible to decide which are the earliest lesions The distribution of the lesions in such cases would call for condemnation even if the origin were not congenital

In early cases of congenital tuberculosis the lesions in the liver spleen, and kidneys are easily recognised as being older than those in the lungs or the mesenteric glands or the systemic glands They are also generally of more than one stage of development, and the pulmonary lesions are always of the secondary and miliary type

Acquired Tuberculosis

The seat of the original primary lesion or lesions should be ascertained if possible If this cannot be done a decision will require to be made based on the distribution of existing lesions

1 When the primary lesion is in the lungs, condemn the lungs and the associated lymph glands

(*a*) If there is extension of the infection to the cervical glands, condemn the head and neck Examine the prepectoral glands and remove them whether tuberculous or not

(i) If there has resulted secondary extension to the lungs in the form of miliary tuberculosis condemn the whole carcass if the deposit is considerable

If the deposit is of lesser degree, examine the liver, spleen, and kidneys and their associated lymph glands, and if recent deposits are noted in any two of these organs or their lymph glands, condemn the carcass

If deposits exist in only one of these organs, or if in two they are not of recent development as shown by size and fibrous encapsulation, examine the prescapular precrural, external inguinal or supra mammary and popliteal lymph glands, and if any one or more of these glands is affected condemn the whole carcass Only affected organs and glands need be condemned in other cases

(*b*) If the primary pulmonary lesion or lesions are of an acute character as shown by the development of tubercles around the original sites of infection together with a minimum amount of fibrous tissue, regard the case as equivalent to miliary tuberculosis and deal with the carcass as in 1 (*a*) (i)

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[1] This sentence is qualified because of the possibility of infection reaching the liver by means of a vein in the intestinal mucosa.

(*c*) If the lesions (generally primary) are complicated by septic processes the effect of this on the meat should be considered, and a more serious view of the condition should be taken than when a septic process exists apart from a tuberculous affection

2 When the primary lesion exists in the mesenteric glands, condemn the mesentery and the intestines and also the liver and portal glands whether these organs show macroscopic lesions or not

(*a*) If the disease has extended to the lungs in the form of miliary deposits, deal with the carcass as set out in 1 (*a*) (i) As a measure of additional safety in these cases regard the liver as having been infected by the arterial blood stream from the lungs if tubercles of two or more different ages are observed in that organ

3 In cases of double infection such as a primary lesion in the lungs and infection of the mesenteric glands (generally resulting from auto infection), condemn the lungs and associated glands, the mesentery, and the liver and portal glands

At a later stage when miliary tubercles in the lungs are in evidence deal with the carcass as in 2 (*a*)

Note —Owing to the fact that the centres of infection are increased in these cases, miliary deposits are more likely to follow in succession, and therefore it is necessary to ensure that recent deposits are not overlooked In cases of doubt the decision should be in favour of condemnation

4 In a case of primary lung infection with secondary extensions to both the cervical and mesenteric glands deal with the carcass as though three separate foci existed. Condemnation of the whole carcass requires consideration if the animal is emaciated or if miliary tubercles have also formed in the lung, in which connexion observe the note in paragraph 3

5 Inoculation lesions should be regarded as primary lesions until proof of extension by the venous blood stream exists, as shown by miliary deposits in the lung When this stage is reached deal with the carcass as set out in 1 (*a*) (i)

6 Tuberculous carcasses should be wholly condemned if emaciated, or if the animals are slaughtered whilst in a condition of fever

7 If tuberculosis of the pleura exists, provided the lesion on the parietal pleura is single, of reasonably limited extent and the subdorsal and suprasternal glands show no signs of infection, the part of the chest wall bearing the lesion may be removed and the rest of the joint passed for human consumption It would be an additional precaution to strip the pleura from the rest of the affected chest wall but this should be done only under the supervision of an inspector Stripping of the pleura should not be allowed except under supervision When the lesions are multiple and extensive and the glands are affected the whole forequarter should be condemned More extensive lesions may be permitted on the visceral pleura than on the parietal without requiring condemnation of the forequarter

8 If tuberculosis of the peritoneum is present the part of the flank on which it is placed should be cut away and condemned, allowing a fair margin for safety The abdominal contents should also be condemned The lumbar glands should be then examined If these are free from infection the carcass may then be passed after removal of the affected part but if they are affected the hindquarter should be condemned

9 Tuberculosis of both pleura and peritoneum combined should be dealt with as though the lesion on each serous surface were being considered separately There does not appear to be sufficient reason to condemn the carcass simply because there is slight double infection Slight lesions in each cavity should be dealt with as in paragraphs 7 and 8

PREVALENCE OF TUBERCULOSIS IN PIGS

An accurate comprehension of the frequency of tuberculosis in pigs can hardly be gained from slaughter house statistics, since variations in the amount of inspection result in pigs in doubtful health being sent to areas where inspection is poorly carried out, and only those supposed to be free from defect being slaughtered where the supervision is most active Variations may arise in districts, which although widely separated carry out equal supervision, and these depend upon the existence of local circumstances which predispose to the condition in pigs For example, pigs from dairying counties which are fed on milk residuals will show a greater percentage of tuberculosis than those from districts where dairying is not a feature For these reasons the returns of the Board of Agriculture,[3] which refer to investigations conducted in different parts of the country, are particularly instructive

In the report of the Chief Veterinary Officer for 1914 details are given respecting pigs which were found to be tuberculous at the time of examination, and which were slaughtered as part of the procedure in swine fever investigations Out of 8632 pigs of all ages so slaughtered 989 were found to be tuberculous This represents a percentage of 11 5, and is undoubtedly a surprisingly high total but, fortunately, it cannot be regarded as representing the average It often happens that an owner possesses a herd which includes many thriftless and ailing animals, and he may consider that the herd is affected with swine fever He notifies the Board, but investigation with post-mortem examination, shows the condition to be tuberculosis This fact would materially increase the percentage of tuberculous infected pigs among those examined by the Board On the other hand the percentage observed in slaughter houses is probably too low owing to the animals being selected if they are taken to a district to be slaughtered where interest in the work is sufficiently keen to result in statistical tables being prepared The percentage on the Board's figures amounts to 11, and the average for Birmingham, Glasgow, and Brighton is about 3, the percentage for the country as a whole is therefore below 11 and above 3, probably 5 per cent would not be far wide of the mark.

It is a matter of additional interest to note that, as in the case of cattle the risk of infection increases with age and varies from 3 2 per cent in unweaned pigs to 19 6 in boars Doubtless a large proportion of the earlier infection results from maternal transmission, and the later increases follow infection from feeding on tuberculous offal either of animals or poultry The actual figures are as follows (Table V) —

TABLE V

Description.	No of pigs examined	Number affected	Percentage affected
Unweaned	1395	47	3·2
Fatting	1841	178	8·8
Stores	4401	594	11·9
Sows	913	150	14 1
Boars	92	20	19·6

As stated, the percentage of infection is much higher than that reported from either English or foreign slaughter houses, a series of which is shown in Table VI —

TABLE VI

District.	Date of information.	Percentage affected with tuberculosis	Authority
Brighton	1914	2 73	Eastwood and Griffiths
Birmingham	1914	2 7	Veterinary Inspector
Glasgow	1914	5 6	
Versailles*	1913	0·4	P Chaussé.
Brussels*	1912	0 28	Veterinary Fally
Luxembourg*	1912	0·97	Spartz.
Copenhagen*	1911	4 69	Rasmussen
Denmark†	1911	4 48	—
Budapest*	1912	1·63	Brenn
Norvare* (Italy)	1911	1·0	Genotte

* La Tuberculose du Por par P Chausse
† Hygiène de la Viande et du Lait 1913

Of 368 428 Dutch pigs slaughtered for export to London, 5516, or 1 5 per cent, were found to be tuberculous

The variations shown in the different districts and countries are the result of several factors, not the least important being the manner of feeding already referred to It will be noted that in Copenhagen and in Denmark as a whole where there is considerable dairying work there are higher rates than in other districts Mohler and Washburn[4] have also drawn attention to the same fact They report that of

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[3] Annual Report of the Chief Veterinary Officer of the Board of Agriculture for 1914 (Cd 8043)

[4] Tuberculosis of Hogs by J R Mohler and H J Washburn United States Department of Agriculture

325 000 pigs slaughtered in Forth Worth Texas, where the animals are raised on alfalfa supplemented with grain, only 51 or 0·016 per cent were condemned as unfit for food, as compared with 3 1 per cent. 3·4 per cent, and 6·4 per cent. respectively condemned in the same period in three cities in one of the leading dairy States

DIFFERENCES BETWEEN BOVINE AND PORCINE TUBERCULOSIS.

There are several important points of difference in the behaviour of tuberculous infection in the pig and the ox. Primary inhalation tuberculosis is the more common method of infection in the ox intestinal lesions in the form of tuberculosis of the mesentery or cervical glands being often the result of auto infection or of dissemination Primary intestinal infection is uncommon apart from the congenital cases and the few cases in calves which follow the ingestion of infected food On the contrary the intestinal type is the common affection of pigs sent for slaughter to provide human food. For this purpose they are mostly slaughtered when less than 8 months old. The different habits of the two animals account partly for the different modes of infection. The calf is a vegetable feeder when it leaves its mother, but pigs feed on animal matter from an early age

The weak spots in the digestive tract are asserted by Chaussé[1] to be the tonsils in the upper part and Peyer s patches and the solitary glands in the intestines The latter are histologically comparable with the former He assumes that traumatism plays a considerable part in producing the lesion. Whether this be so or not it is the fact that lesions are fairly frequently found in the tonsils, though I have not observed the same in the intestinal glands It is by no means a regular occurrence to find the tonsils showing abnormality, even when the submaxillary glands are the seat of disease

Pigs also are much more susceptible to infection by the tubercle bacillus than are other food animals The bovine, human and avian types of bacilli all produce lesions in the pig and although there is apparently a different intensity or virulence dependent upon the type of attacking organism it is not possible to be certain from macroscopic appearances which type is present in any particular case

The infection in the pig is more progressive than in bovines In the latter retrogressive changes and chronicity are features but in the pig the disease progresses more rapidly and fibroid changes are not so frequently met with dissemination being the rule rather than the exception, and that within a few months of infection. The dissemination also appears to be more extensive since the liver and spleen frequently show many more lesions than is the case in bovines and also at an earlier date, when the characteristics of the primary lesion in each are compared

This increased susceptibility and greater power of extension by the blood stream probably also account for the greater frequency of infection of the systemic lymphatic glands and of lesions in the bony skeleton which are met with as compared with corresponding conditions in bovines

TYPE OF TUBERCLE BACILLI OBSERVED IN PIG TUBERCULOSIS

Various observers have investigated the type of the bacillus which gives rise to tuberculosis in pigs since the Royal Commission directed attention to the fact that tuberculosis in the pig might be due to bacilli of the bovine avian, or human type 59 cases were examined for the Commission with the following result (Table VII) —

TABLE VII

Degree of tuberculosis in the pig	Bovine virus	Human virus	Avian virus	Mixed avian and bovine	Total
Local tuberculosis	17	3	5	—	25
Generalised	32	—	—	1	33
Total	49	3	5	1	59

Eastwood and Griffith[2] obtained tubercle bacilli in culture from 78 pigs and of these 26 were of the avian 47 of the bovine, and 1 of the human type There was one instance of mixed avian and bovine and one of mixed bovine and human, whilst in two instances atypical types were recognised It follows that in the Royal Commission s cases of pig tuberculosis 5 out of 59, or 8 5 per cent., were due to avian tuberculosis, and in Eastwood and Griffith s cases 26 out of 78 or 33 per cent

As bearing on these figures it is interesting to note that the Commission state in the guinea pig the avian bacillus does not induce progressive tuberculosis, and the lesions produced may be "minimal," and further, "in our experience the bovine bacillus only has been found to be the cause of natural generalised tuberculosis in the pig" Another conclusion arrived at was to the effect that "a mixed infection with human and bovine tubercle bacilli must be considered possible in the pig although it was not found in any of the cases investigated by us" Eastwood and Griffith discovered one such case

Christiansen[3] examined 118 tuberculous pigs and determined the type of bacillus in 114 cases Of these he found the disease was due to the avian type in 86 instances (75 5 per cent) and to the bovine in 28 (24 5 per cent) These totals show a much higher percentage of avian infection than in those already mentioned and probably local circumstances relating to the manner of feeding or the prevalence of fowl tuberculosis might account for it It should be remembered that the cases examined both by the Royal Commission and Eastwood and Griffith were selected cases In the former group, attention was directed mainly to slight cases of tuberculosis, and in the latter the investigation related to tuberculous lesions macroscopically limited to the primary seats of infection

INSPECTION OF PIG CARCASSES

The recommendation of the Royal Commission in cases of pig tuberculosis is to the following effect —

> In view of the greater tendency to generalisation of tuberculosis in the pig we consider that the presence of tubercular deposit in any degree should involve seizure of the whole carcass and of the organs

This is an extremely sweeping recommendation and remembering the considerable prevalence of tuberculosis in the pig it demands the fullest justification if it is to be literally observed. I have failed to discover in the report of the Royal Commission any evidence in support of the recommendation. A decision as to whether such a high standard is really necessary may best be arrived at by studying the location of the disease in pigs

Christiansen as already stated examined 118 pigs and ascertained the type of bacillus present in the lesion, he also classified the lesions as follows (Table VIII) —

TABLE VIII

Tuberculous lesions	No of pigs examined	Type of bacillus present		
		Avian	Bovine	Undetermined
Localised to mesenteric lymphatic glands ...	61	58	1	2
Localised to cervical glands	15	7	7	1
Affecting both mesenteric & cervical glands	9	9	—	—
Affecting lymph glands generally and viscera	33	12	20	1
Total	118	86	28	4

It will be observed that in the avian type of infection there is a great tendency to infection of the mesenteric glands, and that there is a greater frequency of generalisation in the bovine type 20 out of 28 cases, than in the avian 12 in 86 instances The tabulation as given would appear to suggest that of the 118 cases it would only have been justified to condemn the whole carcass in 33

As regards English experience the cases investigated by Eastwood and Griffith may be used, as these workers give sufficient information to allow of conclusions being drawn from the meat inspection point of view This work was conducted mainly from the pathological standpoint, but I have their permission to use their records in the manner suggested

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[1] La Tuberculose du Porc [illegible] Pathogénie [illegible] Chaussé [illegible] Annales de l'Institut Pasteur [illegible]

[2] [illegible] Tuberculosis in Swine, by A. Eastwood, M.D., and F. Griffith, M.B. (Reports to the Local Government Board, New Series, No. [illegible])

[3] Extract: Hygiène de la Viande et du Lait, July 1914, No 7, p 3[illegible]1

In Table IX the cases are arranged according to the location of the primary lesion, and the numbers in the last column refer to the case number in the original work

TABLE IX.—*Classification of Eastwood and Griffith's Cases*

Group	Type of bacillus		Reference number *
	Mammalian	Avian	
Strictly localised cases—			
Submaxillary glands	11	10	M 14 70 71 75 76 77 79 82 86 88 95 A 31 33 39 44 67 68 72 89 92, 97
Mesenteric glands	—	—	—
Double infection of submaxillary and mesenteric glands	2	2	A 61, 69 M 30 74
Extension from the primary lesion to adjacent organ or its gland—			
Submaxillary gland to lungs or bronchial gland or both	6	2	M 19 55 73, 84 99 A. 10 15
Mesenteric gland with extension to the liver and portal gland	—	3	A. 9 17, 18
Extension in cases of apparent double primary infection of cervical and mesenteric glands to adjacent organs—			
Deposits in liver only	—	1	A 78
„ „ lungs „	2	—	M 46 47†
„ „ both liver and lungs	2	2	M 48 94 A. 50 53‡
Infection of mesenteric gland with extension to liver and later to lungs	—	1	A. 23
Totals	22	21	—

* M = Mammalian A. = Avian

† In Case 47 the submaxillary gland was tuberculous and possibly one mesenteric gland The lungs showed lesions but not the bronchial glands The liver was normal though there were two or three caseous foci in the portal gland The case is regarded as one of double primary infection with extension to the lungs from the cervical glands

‡ In Case 53 infection in the lungs was demonstrated by inoculation of apparently healthy tissue There were no macroscopic lesions

Of the above cases 22 were instances of infection by the mammalian type of bacillus and 21 by the avian. There is no suggestion of special incidence of infection of the mesenteric glands All are instances either of strict localisation or of extension only by way of the venous blood stream, the possible exceptions to the latter being Cases 48 94, 50 and 53 In these it is not possible to state definitely whether the liver was infected by way of the portal vein or the hepatic artery It was probably the former, as no other lesions were discovered, and the spleen and inguinal glands (the only systemic glands examined) were free

All these carcasses might safely have been passed for human consumption after condemnation of the head and neck and internal organs

In these cases there does not appear to be much difference in distribution between those due to the mammalian type of organism and those in which the avian bacillus was found, but in considering more extensive dissemination in which the arterial blood stream appears certainly to have conveyed the infection, the differences are more pronounced A definite conclusion that the arterial blood stream has been the means of conveyance is assumed when the liver is infected without associated lesions in the mesenteric glands or where the spleen is affected

TABLE X—*Instances of Disseminated Mammalian Infection*

Case No	Sub-maxillary gland	Lungs	Bronchial gland	Mesenteric gland	Liver	Portal gland	Spleen	Inguinal	Case No	Sub-maxillary gland	Lungs	Bronchial gland	Mesenteric gland	Liver	Portal gland	Spleen	Inguinal
33	+	+	+	—	+	+	+	—	93	+	+	+	—	+	—	—	—
36	+	+	+	—	+	+	+	—	59	+	+	—	—	+	+	+	—
42	+	+	+	—	+	?	+	?									
43	+	+	+	—	+	+	+	—	24	+	+	+	+	+	?	+	?
49	+	+	+	—	+	+	+	—	51	+	+	+	+	+	+	+	—
54	+	+	+	—	+	?	+	—	63	+	+	+	+	+	+	+	?
65	+	+	+	—	+	+	+	—	90	+	+	+	+	+	+	+	—
83	+	+	+	—	+	—	+	—	98	+	+	+	+	+	+	+	—
85	+	+	+	—	+	+	+	—									
41	+	+	+	—	+	—	—	—	25	—	+	+	?	+	+	+	+
45	+	+	+	—	+	+	—	—									

Table X shows the location of the lesions in cases of arterial dissemination. The first series consists of cases in which the primary lesion was in the submaxillary glands, and the second in which there were probably two seats of primary infection—viz, mesenteric glands as well as submaxillary, the single case in the third group (No 25) showed no lesion in the cervical gland and the mesenteric gland was not examined It is possible that the primary deposit was in these latter glands, and dissemination followed the usual course

It will be observed that the liver was affected in association with a primary lesion of the submaxillary gland, but without splenic lesions in three instances, and with lesions of the spleen in 10 In the five cases of double primary infection the spleen contained tuberculous lesions in all. The spleen and inguinal glands were affected in Case 25

All the above were instances of infection with the bovine bacillus, and in all there were lesions in the lung No instance of similar combinations resulting from avian infection was observed This is interesting, but it is important to note that in both avian and bovine infections dissemination by the arterial stream would seem to be frequently possible without lesions showing in the lung It is not easy to account for the disposition of certain lesions except on this hypothesis, and I have frequently seen instances in which the most careful examination of the lung has failed to indicate the presence of lesions when they have been observed in the liver, the mesenteric glands being free or if the latter was affected, then in the spleen Unless such a possibility is granted it would require the suggestion of backward flow to the splenic gland, and thence into the parenchyma of the organ to account for it

The grouping of these cases is set out in Table XI —

TABLE XI—*Instances of Dissemination by the Arterial Blood Stream without Macroscopic Evidence of Disease in the Lungs*

No	Submaxillary gland	Lungs.	Bronchial gland	Mesenteric gland	Liver	Portal gland	Spleen	Inguinal	Observations.
									Avian
29	+	—	—	N*	+	+	—	—	Inoculation of liver and spleen proved presence of T.B in these organs.
62	+	—	—	+	?	—	—	—	
58	+	—	—	—	—	—	—	—	
60	+	—	—	—	?	—	—	—	Spleen tissue gave positive result but liver tissue negative.
64	+	—	—	—	—	—	—	—	T B demonstrated in muscular tissue.
66	+	—	—	—	?	—	—	—	T B demonstrated in liver
									Mammalian Type
35	+	—	—	+	—	N*	+	—	Culture obtained from lesion in spleen there was only one nodule
62	+	—	+	+	+	+	—	—	Apparently infection passed through lungs to bronchial gland
81	+	—	—	+	—	—	+	—	Spleen showed one tubercle under capsule and one in substance of organ.
91	+	—	—	—	—	—	—	—	T.B demonstrated in liver substance.
99	+	—	+	—	?	—	—	—	Infection of bronchial gland suggests infection by way of lungs.

* Not examined. T B = tubercle bacilli

In the above cases, therefore the organisms were discovered in situations which would indicate that they must have passed through the lungs to reach the localities where they were found, and in doing so had failed to give rise to recognisable lesions There seems a greater possibility of the avian type getting free without giving rise to pathological changes than of the mammalian, for it will be seen that in the avian infections the organism was discovered in four instances in spleens which show no macroscopic lesion, whereas in the mammalian cases lesions were observed in the two spleens in which bacilli were demonstrated in apparently normal tissue Possibly the greater virulence of the mammalian type gives rise to an earlier reaction of the tissues which would tend to enclose the primary focus whilst the tissue being more tolerant of the avian, escape is more easy and frequent. In any event the frequency of bacilli in organs, apart from recognisable lesions, would indicate that in tuberculous infection of any degree in the pig the internal organs should be condemned

In the case of pigs in which infection resulted from intentional feeding on infected material the same results were observed Several of the infected animals might with safety have been passed for human food, and in certain organs bacilli were found apart from recognisable lesions Table XII gives the situation of the lesions in animals purposely infected

TABLE XII.—*Location of Lesions in Pigs found to be Tuberculous after Feeding on Infected Material*

Case	Sub-maxillary gland	Lungs	Bronchial gland	Mesenteric gland	Liver	Portal gland	Spleen	Other organs	Case	Sub-maxillary gland	Lungs	Bronchial gland	Mesenteric gland	Liver	Portal gland	Spleen	Other organs
4	—	+	—	—	—	—	—	—	11	—	+	—	+	+	+	—	K
5	—	—	—	+	—	—	—	—	12	+	+	+	—	—	+	+	—
10	—	—	—	—	—	+	—	—									
17	—	—	—	—	—	+	—	—									
6	—	+	—	—	—	—	—	—	13	+	+	—	+	+	—	—	—
9	+	—	—	+	—	+	—	—	14	+	—	—	—	+	—	—	—

K = kidney

Of the above, Cases 4 5, 10, and 17 might certainly have been passed for human consumption Cases 6 and 9 might have been passed assuming the systemic glands had been free from infection and the lesions in the lungs slight Case 11 shows severe dissemination from infection of the kidney, and Case 12 from infection of the spleen. In Cases 13 and 14 the pigs were fed with the human type of bacillus, and again these could have been passed assuming the systemic glands had been free, and in the case of 13 the lungs only slightly affected In all cases internal organs would require to be condemned and the vertebral column split open and examined and the affected heads and necks removed and condemned

In these animals the presence of tubercle bacilli was demonstrated in apparently healthy organs in two out of three lungs and one out of nine submaxillary glands examined In the case of apparently healthy tissue from organs showing lesions of tuberculosis bacilli were demonstrated in one only out of three examinations of lung tissue, but in three out of four examinations of liver tissue.

Negative results followed the examination of apparently healthy bronchial gland (1 case) mesenteric glands (2 cases) liver (2 cases), and spleen (6 cases) Apparently normal tissue taken from organs showing lesions gave a negative result in one case each of submaxillary gland and mesenteric gland

DIFFERENCES BETWEEN LESIONS OF AVIAN AND BOVINE ORIGIN IN THE PIG

The slight pathogenicity of the avian bacillus for man would appear to suggest that if any striking characteristics existed between the types of lesions produced by the avian and bovine bacilli respectively which admitted of recognition by a meat inspector a differential treatment of affected carcasses might be desirable Eastwood and Griffith consider this point and state that —

> When the infection was due to the typical bovine bacillus the glands were commonly enlarged, often to a marked extent and frequently the adjacent glands had become fused into a coherent mass On section the gland substance was often found to be partly or completely replaced by fibro caseous, gritty material embedded in a firm, translucent matrix. When the infection was due to the avian bacillus, the glands were often not enlarged and when enlargement was present it was usually slight or only moderate in amount On section the glands were found to contain a varying number of caseous and gritty or calcareous nodules, which were easily shelled out of the surrounding gland tissue and left behind smooth fibrous walled cavities But there were several instances where the macroscopic appearances failed to give correct indication of the type of bacillus causing the infection

In these circumstances it is therefore obvious that reliable differentiation is not possible and that tuberculous lesions in the pig must all be regarded from a standpoint which ignores the type of the infecting organism and any regulations should be framed with the object of safeguarding the consumer against the type showing the greatest pathogenicity

ACTION ADVISED IN THE CASE OF PIG TUBERCULOSIS

In general there does not seem to be sufficient reason why the general principles regulating the inspection of bovine carcasses should not be applied to the inspection of pig carcasses provided due weight is paid to the special points of difference which are known to exist. These are as follows —

1 Primary infection of the lungs in pigs is met with only infrequently in slaughter-houses Lesions in the lung are therefore nearly always of the embolic type Primary infection of the digestive tract, on the other hand, is the common form

2 The ratio of cases showing lesions carried by the blood stream is higher in pigs than in cattle and therefore total condemnation must of necessity be more frequent

3 The lungs frequently fail to show lesions when these are present in other organs so that absence of lesions in the lungs does not justify the assumption that there has been no dissemination.

4 Tuberculous lesions of bones and joints are more frequent in the pig than in the ox.

5 Dissemination follows with fair rapidity and the disease is generally progressive in pigs On this account and for reasons above mentioned tuberculosis in the pig, in even slight amount in the cervical or mesenteric glands, requires as a routine (*a*) the examination of all organs, if these are available, (*b*) the examination of bones and joints particularly the cervical column, by splitting down, and the ribs for nodules, as well as a careful inspection of the hock-joints, opening these up if necessary, and (*c*) an examination of the prescapular, precrural, and supramammary glands Any evidence of deposit in situations (*b*) and (*c*) calls for condemnation of the whole carcass

6 The pig is prone to attack by any of the three types of organism In numerous instances the internal organs contain living bacilli without macroscopic evidence of the disease The internal organs of a tuberculous pig should always therefore, be condemned. This recommendation may be criticised from the point of view that if bacilli rest in the organs they may likewise do so in the tissues, and therefore if it is necessary to condemn organs it should be necessary to condemn the carcass The reasons against this are that the organisms which do not give rise to lesions are mostly of the avian type The mammalian type is usually associated with macroscopic lesions The bacilli seem able to reside in these organs for a longer period than in the muscular system In the latter case they soon appear to pass into the lymphatic glands and either set up lesions or are destroyed Note the few instances in which mammalian bacilli were found in organs apart from lesions

7 Pigs are often submitted for sale in wholesale markets with the heads and necks or lymphatic glands removed No organs either are attached. Power should be given to condemn such carcasses, as these removals are generally on account of tuberculous infection and it is essential that the character of the lesion should be examined in certain instances

8 Tuberculosis of the pleura and peritoneum is not so common in the pig as in the ox and when it does exist it is usually a later manifestation in the former than in the latter and much more frequently calls for total condemnation

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POOR LAW MEDICAL OFFICERS SALARIES—The Axminster (Devon) board of guardians have decided to increase the salaries of their district medical officers by one third for the duration of the war

TUBERCULOUS SOLDIERS IN CORNWALL.—At the last meeting of the Cornwall County Council a letter was read from the Cornwall Patriots Committee, offering to erect a suitable home for sailors and soldiers who were suffering from advanced tuberculous disease The committee required that a suitable rent should be paid and that after the war the county council should take over the home permanently The county council unanimously resolved to accept this generous offer

THE LATE DR. T HOPE LEWIS, AUCKLAND, N Z—By the death of Dr T Hope Lewis, of Auckland, the profession has lost one of its most respected and well known members At an early age he entered the Navy and after a few years' service he went to New Zealand and took the position of medical officer to the thermal springs at Rotorua At the end of his engagement he commenced practice in Auckland and soon made a name for himself as a surgeon For some months before his death he acted as a consulting surgeon to the New Zealand Forces and it was while on this service that his death took place

THE IMMEDIATE EFFECT OF CIGARETTE SMOKING ON HEALTHY MEN AND ON CASES OF "SOLDIER'S HEART"

By JOHN PARKINSON, M D Lond , M R C P Lond ,
CHIEF ASSISTANT TO THE CARDIAC DEPARTMENT LATE MEDICAL REGISTRAR TO THE LONDON HOSPITAL TEMPORARY CAPTAIN R A M C IN CHARGE OF HEART SECTION AT A CONVALESCENT DEPÔT, B E F
AND
HILMAR KOEFOD, M D Harvard,
OF BOSTON U S A
(*From the Hampstead Military Hospital for Heart Cases*)

In this war, as in wars of the past, many soldiers prove inefficient because they become unduly breathless on the exertion which military service entails The same individuals often complain of præcordial pain, palpitation, giddiness, and exhaustion Some of these cases present the signs of valvular disease of the heart (V D H), and are discharged from the Army on this account Yet in the majority of soldiers with these symptoms no abnormal physical signs are found , these are classified in the Army Medical Service as D A H (disordered action of the heart) , the terms "soldier's heart" and "irritable heart" have also been applied to them A clinical account of these disabilities has been published by one of us[12]

It has been freely asserted that excessive smoking, particularly of cigarettes, is one of the most potent causes of the condition Where so many factors are in operation a definite conclusion as to the truth of this assertion must prove difficult The end results of enforced abstinence from tobacco in these patients would give the most direct answer The difficulties of carrying through such a line of observation and the risk of deception by the patient seemed too great to accept Hence, as a lesser contribution to the problem, we decided to investigate the immediate effect of cigarette smoking on the circulation and on the reaction to exertion of these patients, and to compare this with its effect on healthy soldiers in training The opportunity for this work was obtained at the Hampstead Military Hospital for Heart Cases, where various investigations upon the nature of these disabilities have been instituted in co-operation with the Medical Research Committee

Previous Observations

We have attempted to abstract all the chief published observations on the immediate effect of tobacco smoking on the circulation of healthy men The literature abounds in clinical accounts of patients whose symptoms or diseases are ascribed to excessive smoking , with these we are not here concerned, nor with the pharmacological problem of the active or noxious ingredient of tobacco smoke Of some 50 papers abstracted we here summarise all those which contain any series of actual observations on the subject in hand

Hesse[4] observed the effect of cigar smoking on the pulse-rate and blood pressure of 25 subjects, chiefly patients with various chronic diseases One reading was taken before smoking and one after each cigar In the majority there occurred an increase in pulse rate, together with a rise in blood pressure

Lee[6] has contributed an important paper on the subject From observations on eight healthy men he concludes as follows In the novice there is always an initial rise of systolic blood pressure (10–20 mm Hg), and the pulse is quickened somewhat Symptoms of shock and collapse are followed by a fall in pressure In moderate smokers the blood pressure rises slowly (10 mm Hg), and this is usually associated with acceleration of the pulse In an excessive smoker the pressure rises 2–4 mm , and the pulse is unaffected

Bruce, Miller, and Hooker,[2] from observations on two healthy young men accustomed to moderate smoking, conclude that after smoking (pipe, cigar, or cigarette) there is usually an increase in heart-rate The increase is not great and may be absent altogether, even when the blood pressure shows distinct changes The maximum and minimum pressures usually rise slightly, the maximum the more, so that the "pulse pressure" tends to increase

An article by Nicolai and Staehelin,[10] though it contains no observations on the immediate effect, is noteworthy as a serious attempt to ascertain the effect of smoking continued over a period of six months During this time each of the authors smoked 6–8 cigars daily, then they abstained from smoking for six months In Staehelin's own case the pulse rate, as shown by the mean rate on three days, was 82 during the smoking period and 75 during the period of abstinence Similarly the pulse rate after a standard exertion was 157 compared with 124 per minute Not only was the pulse-rate after exertion higher during the smoking period, but it took much longer to return to the normal The blood pressure was rather higher during the months of smoking, but the readings were not uniform In the case of Nicolai himself similar results were obtained, but the figures were unfortunately lost

John[5] tried the immediate effect of smoking two cigars on nine patients with various chronic diseases The von Recklinghausen apparatus was used to determine diastolic pressure, and a few individual charts are produced He concludes that there is a clear increase in diastolic pressure while the systolic pressure is variously affected, and that the pulse sometimes decreases in rate

Frankl Hochwart[3] records extensive observations on the effects of smoke laden atmospheres Of 28 healthy doctors thus exposed passively to the effect of smoke, 23 showed some change in blood pressure ; in half of them it fell The effect of actually smoking three Egyptian cigarettes during 3–12 minutes was observed in seven smokers and three non smokers If affected at all, the blood pressure generally fell, but the change both in pressure and in pulse rate differed greatly in different subjects A combination of active and passive smoking produced the greatest changes Denicotinised tobacco had little effect It does not appear that more than one observation was made before and another after smoking in these experiments

Aikman,[1] in a careful article on the effect of smoking on the circulation, includes his own experiments on 28 young healthy smokers, using a single Turkish cigarette in each case Of 27 cases, the pulse rate increased in all but 4, and 16 showed an increase of more than eight beats per minute In four heavy smokers the pulse increased by over 40 beats He noted an initial decrease of 4–6 beats in three cases He claims that the pulse became "irregular" in ten cases, but the nature of the arrhythmia is not stated and no graphic records are furnished The effect on the blood pressure and the "pulse pressure" was varied

Class of Case

The patients were soldiers between the ages of 17 and 32 They all complained of undue breathlessness on exertion, what is more, they appeared more breathless after simple exercises than did healthy men Other symptoms such as præcordial pain, palpitation, giddiness, and exhaustion, were present in many We excluded all cases which we believed to be suffering from valvular disease or obvious myocardial disease Indeed, no abnormal physical signs were found in any of the cases used The men were not confined to bed, and they left the hospital each afternoon for walking exercise All were smokers, and their habit in this respect is indicated in Table I They were consecutive cases and were not selected because smoking was presumed to be a special factor in the production of their symptoms

The controls were healthy cadets in training, between the ages of 20 and 28 , all were cigarette smokers, and had presented no symptoms while undergoing the usual physical training of a soldier

Most of the patients and controls began to smoke between the ages of 15 and 18 About half the patients and half the controls admitted that they smoked more since enlistment than before Two patients (Cases 4 and 12) and one control (6) first began to smoke after enlistment

The degree of staining of the fingers, which was present in most of the subjects did not prove helpful in estimating the severity of the cigarette habit The use of a holder, the avoidance of smoking cigarettes to the end, and thorough cleansing of the fingers, suffice to prevent much staining even in heavy smokers

Method of Observation

Attention was confined to the effect of smoking on (1) pulse, respiration, and blood pressure, and on (2) reaction to exertion

Before the observations on actual smoking were commenced the patient performed a simple exertion test, and this was repeated when the period of smoking was over

The observations were made in the afternoon (two hours after lunch), at a time when the subjects had refrained from smoking for a period of five hours The Mackenzie ink polygraph was always used to record the pulse and respiration The respiratory rate was obtained by connecting the second tambour of this instrument with a respiratory bag held against the chest wall by a light belt

After the apparatus had been adjusted the patient lay quietly on the bed for at least 15 minutes Half minute records of the pulse and respiration were then taken simultaneously every five minutes until three consecutive readings were practically constant

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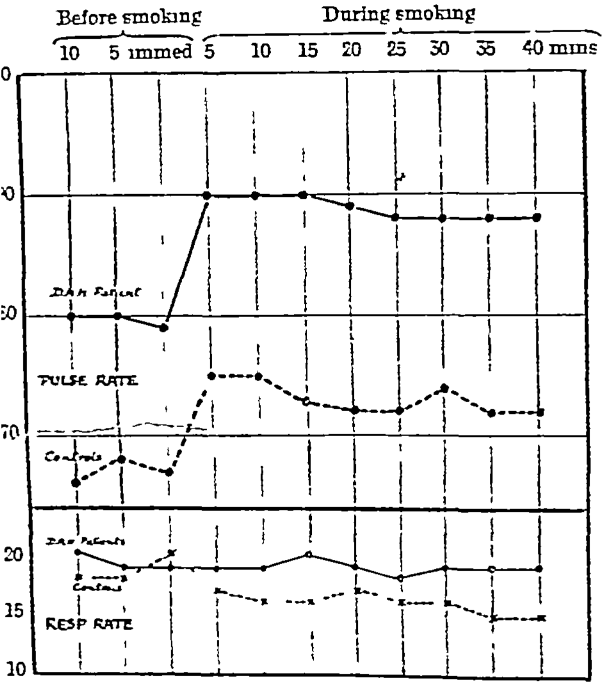
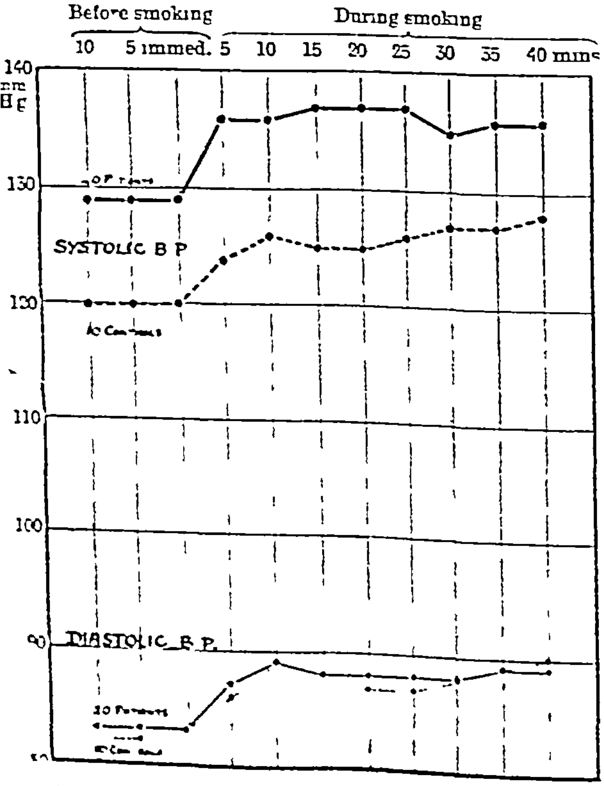
* Undertaken on behalf of the Medical Research Committee

CHART 1



Effect of smoking (4–5 cigarettes) on pulse and respiratory rates in 20 patients (D A.H) and 10 controls (healthy men)

CHART 2



Effect of smoking (4–5 cigarettes) on systolic and diastolic blood pressure in 20 patients (D.A.H.) and 10 controls (healthy men)

Without disturbing the apparatus the patient was then made to stand and a continuous record of the standing rate was taken for two minutes The rate for the first six seconds was considered the *immediate* rate, and is so named on Chart 3, otherwise the record was divided and counted in half minute periods The patient was then disconnected, though the wrist-splint and respiratory bag were left in place, and he was made to walk a few yards to a flight of 25 steps, which he descended and climbed once at a quick walking pace On his return the recording apparatus was reconnected (within three seconds) and a continuous record was taken for three consecutive minutes, with the patient standing As before, the rate during the first six seconds was called the "immediate rate" The patient finally lay down on the bed and a record of two minutes' duration was taken This series of observations will readily be understood on reference to Chart 3 (q v)

The first exertion test having been completed a Riva-Rocci mercurial sphygmomanometer (Martin's modification) was also applied The auscultatory method was used the systolic pressure was read when the sounds first appeared as the mercury fell and the diastolic when the clear loud sounds became soft and murmur like.[6] Blood pressure readings (systolic and diastolic) and pulse- and respiratory-rates were taken at five-minute intervals until three consecutive readings were alike The patient, still lying on his bed was then asked to smoke cigarettes, one after another, until either four or five had been consumed The first cigarette, smoked rather quickly, was finished in the first five minutes and the whole period of smoking occupied about 40 minutes The pulse-rate was recorded continuously during the first five minutes of smoking Subsequently pulse- and respiratory rates and blood pressure readings were recorded every five minutes While the polygraphic record was actually being taken, smoking was suspended so that the respiration curve should not be modified by the act of smoking After the last cigarette three constants of pulse and respiration were obtained and the exertion test, as performed before smoking, was repeated in its entirety

In all the observations a small Virginian cigarette was used, the brand actually employed was that sold under the name 'Wild Woodbine," a cigarette in common use among soldiers The weight of five of these cigarettes was 4 8 grammes and the weight of the unsmoked ends was about 1·4 grammes, thus from 3 to 4 grammes of this tobacco were consumed by each subject

Effect on the Pulse-rate (see Chart 1 and Tables I and II.)

In general there was a moderate increase in the pulse-rate

Among 20 patients the average rate before smoking was 80 and during smoking 89 an increase of 9 beats The rate increased in all cases except three non inhalers in whom it remained constant

In a single case the average pulse-rate before smoking was 64 and during smoking 93 an increase of 29 beats In the remainder the increase ranged from 3 to 15 beats There was a sudden increase in the average rate during the first half-minute of smoking from 80 to 87 and during the remainder of the first five minutes a gradual increase to 93 At no time during the first five minutes was slowing of the pulse observed, either in the average or indeed in any individual case, no preliminary slowing took place, such as is described in animals after the introduction of nicotine It is probable that the initial decrease in pulse-rate sometimes described in man is quite incidental or due to inexact methods of recording rate The pulse-rate usually rose within five minutes (and during the first cigarette) to a maximum which was almost maintained throughout the period of smoking (see Chart 1) Among the inhalers, comprising half the cases, the average pulse-rate during smoking was 11 beats higher than before smoking was commenced, in non inhalers the average increase was seven beats (see Table III)

The average pulse rate in ten healthy soldiers *(controls)* before smoking was 67 and during smoking 73 (see Table II and Chart 1) The increase is rather less than in the D.A.H. patients but similarly the maximum average pulse-rate was reached at the end of five minutes and this rate was maintained throughout the period of smoking The pulse-rate was increased in all but two cases, in one of these the rate before smoking was 68 and during smoking 64, in the other it was unaffected Irregularity of the pulse referable to smoking was not observed in any case of either series, though normal sinus arrhythmia was often seen before and during smoking

Effect on Respiratory Rate (see Chart 1 and Tables I and II)

The average respiratory rate remained unaffected among the patients as a whole and also among the inhalers as a group In half the cases the rate increased slightly, in the other half it decreased In no case was there an increase of more than four per minute

In the *controls* the average respiratory rate before smoking was 18 and during smoking 16 In three cases there was a slight increase, in two it remained unaltered, while in five it decreased In two of the latter the rate decreased by seven per minute during smoking

Effect on Blood Pressure (see Chart 2 and Tables I and II)

In 15 of the 20 patients the blood pressure, both systolic and diastolic, was definitely raised In the remaining 5 cases it rose very slightly or not at all In none did a fall of blood pressure occur

TABLE I —*Immediate Effect of Smoking Cigarettes (4–5) in 20 Patients ("Soldier's Heart")*

N no Y yes Inc increased Unc unchanged

No	Age	Cigarettes smoked daily	Inhales	Breathlessness on exertion test after smoking	Average pulse-rate		Average respiratory rate		Average systolic blood pressure		Average diastolic blood pressure	
					Before smoking	During smoking	Before smoking	During smoking	Before smoking	During smoking	Before smoking	During smoking
1	23	10	N	Inc.	88	105	12	16	137	141	82	85
2	20	15	Y	"	65	74	15	14	147	149	90	92
3	23	10–12	Y	Unc.	68	76	17	14	120	134	67	81
4	20	10	N	Inc	79	93	21	22	138	143	77	80
5	23	15	Y		78	87	16	17	130	147	87	92
6	21	10	Y	Unc.	83	95	15	16	110	123	75	85
7	22	15	Y		67	80	31	24	120	130	88	88
8	32	20	Y	Inc	70	77	22	22	115	123	73	81
9	17	5–10	N		78	79	13	14	120	121	82	81
10	24	20	Y	"	79	84	20	17	120	133	72	81
11	19	5	N	Unc	78	77	19	21	110	112	78	81
12	22	5	N	"	73	87	28	23	130	140	80	82
13	22	2	N		89	94	13	14	145	150	102	104
14	27	5–10	Y	Inc	85	94	25	25	125	138	88	96
15	23	10	N	"	84	87	21	19	143	151	78	88
16	21	—*	N	Unc	91	96	23	20	140	143	87	91
17	29	6–7	N	Inc	97	98	19	16	135	137	90	92
18	30	10	Y	Unc.	64	93	22	23	120	133	93	97
19	22	8	N	Inc.	88	93	28	30	130	132	80	84
20	23	10	Y	"	89	101	11	13	140	148	93	100
Average					80	89	19	19	129	136	83	88

* 2 oz pipe weekly

TABLE II —*Immediate Effect of Smoking Cigarettes (4–5) in Healthy Men (10 Controls)*

1	27	10	Y	Unc	60	63	15	16	118	127	82	87
2	28	30	Y	"	55	66	18	11	110	119	72	83
3	25	20	Y		69	79	21	15	116	126	82	87
4	24	15	Y	"	68	64	21	24	135	133	85	83
5	21	15	Y		76	75	18	15	115	121	78	83
6	23	15	Y	"	67	75	19	13	130	136	90	94
7	20	20	Y	Inc.	68	74	19	19	110	116	85	91
8	29	25	Y	Unc	64	73	14	14	125	128	88	88
9	23	25	Y	Inc.	77	82	17	19	117	128	80	91
10	26	25	Y	Unc	66	75	22	15	125	131	85	92
Average					67	73	18	16	120	126	83	88

TABLE III.—*The Effects of Smoking on Inhalers and Non inhalers Compared (20 Patients)*

—	Average pulse-rate.			Average respiratory rate			Average systolic blood pressure			Average diastolic blood pressure		
	Before smoking	During smoking	Change	Before smoking	During smoking	Change	Before smoking	During smoking	Change	Before smoking	During smoking	Change
Inhalers (10)	75	86	+11	19	18	– 1	125	136	+11	83	89	+ 6
Non inhalers (10)	84	91	+ 7	20	19	– 1	133	137	+ 4	84	87	+ 3

Systolic pressure—The average systolic pressure rose almost to its maximum during the first five minutes of smoking—i e during the smoking of the first cigarette—at the end of which it had risen 7 mm Hg The increase was maintained and varied little during the whole smoking period In 5 cases the blood pressure did not rise until ten or more minutes had elapsed Among the inhalers (half the cases) the average systolic pressure rose 11 mm, in non inhalers it rose 4 mm (See Table III) The greatest individual increase was 17 mm Four of the five patients in whom the rise was insignificant were inhalers

The average systolic blood pressure in the *controls* rose to its maximum an increase of 6 mm, in the first ten minutes and more gradually than in the D A.H. cases This increase was again maintained, and reached 8 mm by the end of the smoking period The systolic pressure rose in all but two cases which were unaffected, in these the pulse-rate also failed to increase In each of two controls the increase was 15 mm Hg

It is suggested that the fall in blood pressure so often recorded in previous observations only occurs when toxic symptoms have supervened, and then not in all cases (See under Toxic Symptoms)

Diastolic pressure—The average diastolic pressure in the patients rose more gradually than the systolic and reached its maximum, 6 mm, ten minutes after the commencement of smoking, this increase was maintained With one exception, in all cases where the average systolic pressure rose, the diastolic pressure rose also The increase in diastolic pressure among inhalers averaged 6 mm, and among non inhalers 3 mm

The average diastolic pressure in the *controls* rose to 5 mm, the maximum, during the first ten minutes of smoking, and *the increase was maintained* The curve coincides almost exactly with that of the D A.H. series

It is worthy of notice that in repeated and prolonged observations on the blood pressure of any individual the readings tend to fall slightly, even after an apparent constant has been obtained and apart from any pharmacological procedures This may be due either to prolonged rest during the course of an experiment with disappearance of initial excitement, or it may depend on some temporary change in the vessels of the arm after repeated use of the sphygmomanometer cuff Illustrative examples have been recorded in papers by Lee[6] and by Parkinson and Rowlands[11] If allowance were made for this slight fall in pressure during any prolonged observation, the true figures of increase in blood pressure during smoking would actually be rather *higher* than those given.

EXERTION TESTS BEFORE AND AFTER SMOKING

(*See Chart 3*)

The difference in the average pulse-rates on exertion, before and after smoking, though not pronounced, was *definite enough*

The difference was as follows (1) The average recumbent rate was 3–5 beats higher than before smoking, (2) the average standing rate was 8–10 beats higher, (3) the average rate after exertion was 8–10 beats higher, (4) the recumbent rate after exertion was 3–7 beats higher

These differences would not be significant in a single patient, but we are here contrasting the average rate in 20 patients during the exertion test with the average rate in the *same* individuals on the *same* test, but after smoking (See two upper curves in Chart 3)

Controls—The average pulse-curve during exertion tests following smoking, although at a slightly higher rate (2–4 beats), followed the corresponding curve before smoking more closely than in the D A.H series In other words, among the controls the curve of pulse-rate on exertion was scarcely affected by smoking The difference between the curves before and after smoking in D.A.H cases is 8–10 beats, in the controls it is merely 2–4 beats

Incidentally, another difference between D A H cases and controls, not related to tobacco, is shown in Chart 3 In the former the pulse-rate falls neither so rapidly nor so completely after standing and after exertion as it does in the controls

The Breathlessness on Exertion after Smoking

(*a*) *Respiratory rate on exertion*—As described above, under Method of Observation, the respiratory rate was recorded graphically during the exertion tests, together with the pulse rate Curves of the respiratory rate on standing and on exertion, before and after smoking, have been prepared from the average figures obtained, curves similar to those of pulse rate depicted in Chart 3 The respiratory rate curve on exertion before smoking *proved to coincide* almost exactly with that after smoking, smoking did not appear to influence it For this reason, and for lack of space, these curves are not reproduced. The respiratory rate was not more frequent on the exertion test performed after smoking

In spite of this fact, and in the absence of graphic proof we yet consider that *breathlessness* was often greater on exertion after smoking (see paragraph (*b*))

(*b*) *Breathlessness on exertion*—When each subject returned from his first exertion test, that *before* smoking, we both observed the degree of his immediate respiratory distress and noted it, nothing was said to him on the matter When he returned from the second exertion test, that *after* smoking, we again agreed as to the degree of distress and whether it appeared the same as or greater than at the previous test This time the man's opinion was also asked—viz., whether his breath was about the same as after the previous test, or not Often he admitted, with a smile, that his breathing ' was more noticeable on this occasion If we were all in doubt or at variance, the symptom was considered "unchanged.' Whereas if we were satisfied that more objective distress was shown, and the patient felt more breathless, we noted that breathlessness was "increased" (See Tables I. and II)

If, as admitted, the respiratory *rate* was not more frequent on the exertion after smoking, wherein does the breathlessness lie? Probably it is associated with an increased amplitude of respiration The subjects appeared to us to breathe more deeply Unfortunately there does not appear to be any simple clinical method of recording the amplitude of respiration, or rather no method which is sufficiently exact for comparative observations Hence no graphic evidence is afforded in support of the following observations which are tabulated in the fifth column of Tables I and II (q v)

In 12 of the 20 patients breathlessness was more pronounced in the exertion test after smoking, in the remaining eight cases it was unchanged Six of the 12 cases affected were inhalers and six non inhalers so that the "wind" can apparently be adversely affected by smoking even without inhaling

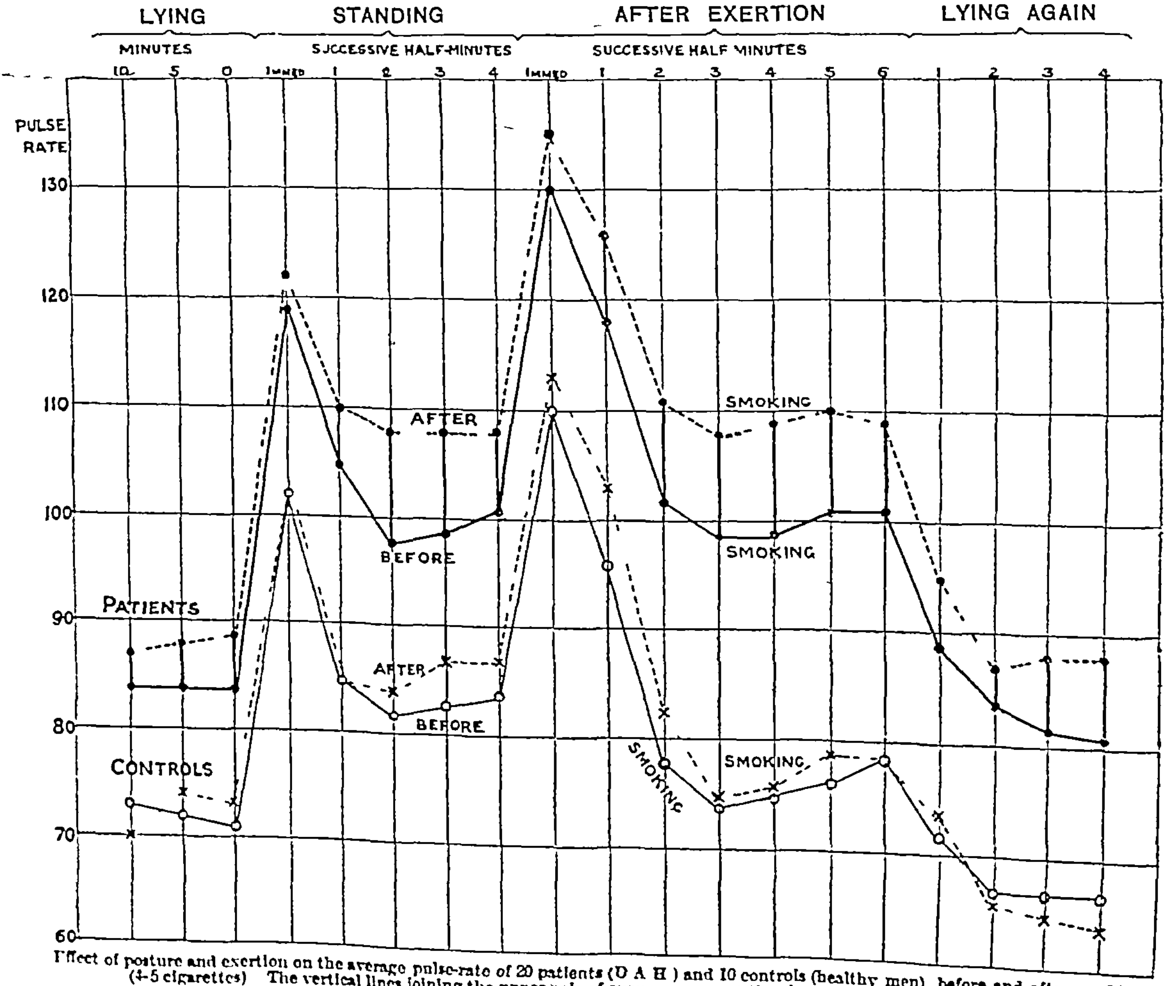
None of the controls showed breathlessness after the exertion test previous to smoking but two of them noticed slight breathlessness on the same exertion *after* smoking and objectively appeared breathless

Toxic Symptoms

In eight of the 20 patients mild toxic symptoms were noted With one exception they appeared during the third, fourth, or fifth cigarette Three men complained of slight giddiness, three of nausea, and two of palpitation Two complained of præcordial pain, in one the pain was felt during the second cigarette, in the other during the fourth, and it disappeared five minutes after completing the fifth one The latter stated that smoking frequently produced this pain Case 7 with his fifth cigarette became pale and nauseated, almost vomiting The blood pressure was at once taken and the systolic B P was found to be 150 mm Hg and the diastolic 80 mm Hg The corresponding readings five minutes before had been 125 mm and 80 mm respectively

In a second case not included in the series because the observation were necessarily interrupted the subject became restless and giddy on completion of his first cigarette The radial tracing showed a gradual acceleration of rate from 80 to 145 and the pulse then became so small that it ceased to be recorded by the polygraph When the rate had reached 100 the systolic blood pressure was found to be 165 mm and the diastolic 90 mm, an increase of 30 mm and 10 mm respectively above the rate before smoking

CHART 3



Effect of posture and exertion on the average pulse-rate of 20 patients (D A H) and 10 controls (healthy men) before and after smoking (4-5 cigarettes) The vertical lines joining the upper pair of curves represent the change in rate ascribed to smoking

These two observations indicate that toxic symptoms from smoking may be accompanied by a *rise* in blood pressure (*Cf* Lee [6])

Of the *controls*, two showed toxic symptoms One began to feel warm after his fourth cigarette, then he perspired, grew pale, and finally vomited The other became somewhat pale after his fifth cigarette

Remarks

The object of our investigations upon smoking has been a restricted one, for we have attempted simply to determine the immediate effect of smoking a few cigarettes upon the circulatory system This effect has been ascertained in healthy men and in soldiers unduly breathless on exertion, and comparisons are drawn between them Instrumental methods were used whenever possible Sufficient preliminary observations formed a control for each individual, and during smoking numerous consecutive readings were taken Thus we have obtained a uniformity of result which suggests that the immediate pharmacological action of cigarette smoking, *as commonly practised*, is here correctly described

With the larger problem of the *later* effects of cigarette smoking indulged in for years we have *not* attempted to deal By its nature this subject abounds with difficulties, and a perusal of the literature only emphasises its complexity Yet it is perhaps allowable for us to make a few direct references to the question of smoking in the etiology of "soldier's heart" We are not of opinion that excessive smoking is the chief or, indeed, a frequent cause of this group of disabilities In this opinion we are supported by several facts—viz (1) An adequate cause for the disability is found in a large proportion Thus, a history of acute rheumatism is obtained in about 20 per cent of all cases of any severity [9] Frequently the trouble dates from dysentery, "trench fever," or other infection (Mackenzie [7]) (2) In about 50 per cent of all cases the symptoms have been present for several years, many have "always been short-winded"[12] The mere assertion that smoking has here been the ultimate cause would be futile (3) More than 20 examples of non smokers with identical symptoms and characteristics have been investigated at this hospital (4) There is no evidence, and we do not find from our case histories, that these patients, as a class, smoke more heavily than the average soldier

On the other hand, we are satisfied that as an accessory cause in the production or accentuation of the breathlessness and pain excessive smoking is of considerable importance The immediate pharmacological effect of smoking on the circulation of healthy men, habitual smokers, is shown to be not great, but definite enough, and in its direction unfavourable to effort In patients with "soldier's heart" who are unduly breathless on exertion this disadvantageous effect is rather more pronounced, especially when tested by exertion Many patients will admit that they experience præcordial distress or pain after over smoking, and this is confirmed, as we know, by inquiry among smokers in our own profession. The general opinion among athletes is undoubtedly against the use of tobacco when preparing for strenuous muscular exertion However incomplete our knowledge of the late effects of excessive smoking may be—most incomplete it is—we wish to say with Aikman, that "certainly we should hesitate to administer any drug having as marked an effect over such periods of time"

Summary

1 The immediate effect of cigarette smoking upon the circulatory system and upon the breathlessness of exertion was observed in 30 smokers, of whom 20 were cases of "soldier's heart" and 10 were healthy soldiers Each subject smoked either four or five cigarettes during a period of 40 minutes

2 A demonstrable effect was recorded in 17 of the 20 patients, the 3 unaffected were non inhalers Nine of the ten controls all inhalers, were influenced in the same fashion, though not to the same degree

3 The average pulse rate among the patients during smoking was nine beats higher than before smoking, in the healthy controls it was six higher Initial slowing of the heart was never observed, nor any irregularity referable to smoking

4 The rate of respiration in the patients was unaffected, in the controls it was slightly reduced

5 The average systolic blood pressure was raised by 5–10 mm Hg and the diastolic by 5 mm, both in patients and controls

6 These effects appeared within five minutes, with the first cigarette they almost reached the maximum, and this was maintained throughout the smoking period

7 A simple exertion test was performed before smoking and repeated on its cessation In the patients the pulse rate maintained a higher level throughout the test *after* smoking, and half of them were more breathless both subjectively and objectively In two patients præcordial pain was induced by smoking, apart from exertion But in the controls the pulse rate curve during exertion was much the same after smoking as before, and breathlessness was induced in two only

8 These observations show that, in health, the smoking of a single cigarette by an habitual smoker usually raises the pulse rate and blood pressure perceptibly, and these effects are a little more pronounced in cases of "soldier's heart" Moreover, the smoking of a few cigarettes can render healthy men more breathless on exertion, and manifestly *does* so in a large proportion of these patients

9 Excessive cigarette smoking is not the essential cause in most cases of "soldier's heart", but, in our opinion, it is an important contributory factor in the breathlessness and præcordial pain of many of them

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HORSESHOE KIDNEY BY UNION OF THE UPPER POLES, DIAGNOSED PRIOR TO OPERATION

WITH CALCULUS IN LOWER POLE ON LEFT SIDE

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IT is remarkable that almost at the same time I should have under my care three cases, two in the Glasgow Royal Infirmary and one in a private nursing home, which stand alone in my experience, and, as far as I can ascertain, are unfamiliar to writers on the subject of urology Two cases are unique by reason of the lesions, the third on account of the coincidence of rare genital malformations in both husband and wife The cases are (1) Horseshoe kidney by fusion of the upper poles, diagnosed prior to operation for renal calculus, this case is described below (2) Complete retention of urine in a woman caused by a gumma surrounding the urethra and producing prolapse of urethral mucosa (3) Bilateral cryptorchism in a man and double uterus in his wife Of the first of these cases I give the clinical notes and an account of the operative treatment.

Fixed malpositions and malformations of the kidney are not merely pathological curiosities While on account of their rarity they are not of practical importance to the general practitioner, to the surgeon who desires to protect himself and his patient against catastrophes in the operating room an acquaintance with these abnormalities as well as with malpositions of the kidney is a necessity

Of the many malformations of the kidney, if we except congenital absence or atrophy of one kidney, the fusion of two kidneys, as met with in horseshoe kidney, sigmoid kidney, and disc shaped kidney, is the most important The amount of fusion that takes place between two kidneys varies greatly We may have the two organs united together across the vertebræ at their lower extremities by a narrow, thin, and flat isthmus, which may be formed of connective tissue only, or the union may be made up of a broad band of kidney parenchyma These are the lowest degrees of coalescence, from these we meet with all shades of fusion until we reach a condition where the two kidneys become completely incorporated so as to form either one disc-shaped organ, or an elongated body lodged on one side of the spine, the sigmoid kidney

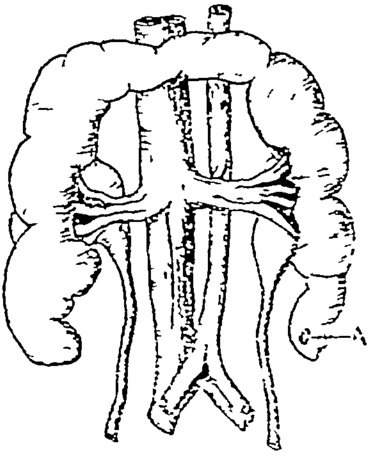
Horseshoe kidney is not only the lowest grade but also the most common form of fusion, and almost without exception it is the lower poles that are joined together, in a very few of the instances recorded the upper ends are united The present case is one of these, and it is the only one I can discover in which a pre-operative diagnosis was made In this respect it is unique Israel, however, diagnosed prior to operation a diseased horseshoe kidney of the more common form, and his diagnosis was confirmed This is the only other case of clinical diagnosis before operation, one which can be made only in exceptional circumstances and when the surgeon is on the outlook for the condition I may briefly state the history of the case as received from his medical attendant, Dr J D Walker, Camelon, Falkirk

> *The patient was never* "*strong*" and seven years ago (1909) he had an attack of orchitis associated with pyuria which confined him more or less to bed for five months, but ultimately he recovered sufficient

health to resume business and for a few years enjoyed comparatively good health although practically pus was never absent from the urine. His health was always best during the summer months In winter especially in very cold weather he suffered from pain in the right lumbar region, but it was never very severe until February 1915, when he had a very violent attack of pain in the right side, accompanied by an increase in the amount of pus in the urine difficulty in controlling the escape of urine, and vomiting which lasted for nearly a week Dr Walker says Since I have had him under observation there has no been anything else outstanding He complained always of the pain on the right side and sometimes I think there was pain on the left but this was not constant " In September 1916 he complained of pain while at stool between the rectum and the bladder but on examination per rectum nothing was discovered to account for the pain

Dr Walker tells me that Dr A. E Hunter of Falkirk had the urine repeatedly examined bacteriologically when it was heavily loaded with pus No tubercle bacilli were found. A coliform bacillus was present but he was unable to say definitely that it was the *Bacillus coli* A surgeon in Edinburgh was consulted and a cystoscopic examination made but as far as I can ascertain no definite opinion was arrived at All kinds of urinary antiseptics have been tried, I understand, but without success " Vaccine treatment also was employed (*B coli*) dose 30 to 50 millions "The difficulty everyone has had seems to be the site of origin of the pus Nothing definite was discovered

I was consulted at the end of October 1916, and sent the patient into the Regent Nursing Home He was a slender, thin man with feeble muscles and lax abdominal walls He complained of pain in the right lumbar region and frequency in micturition occasionally associated with bladder irritation, and he always noticed that the urine was cloudy and thick, especially in the morning With rest in bed the irritation subsided and the lumbar pain disappeared. Cystoscopic examination showed moderate congestion of the mucous membrane at the neck and in the trigone The right ureteral orifice was practically normal while the left showed distinct evidence of irritation the opening being dilated and the lips irregular and thickened The urine escaping from the right ureter was clear that from the left purulent The X rays showed an oval shadow the size of a horse bean close to the point of the left transverse process of the second lumbar vertebra, it was not movable on deep respiration



On palpation although the patient was very thin, the kidneys could not be felt in their normal position but when he was under an anæsthetic a horseshoe-shaped mass could be made out the bridge joining the kidneys being an inch and a half below the ensiform cartilage (see figure) Both limbs of the shoe were narrow bands and extended down to the level of the transverse processes of the second lumbar vertebra On pressure on the lower pole of the left kidney the patient complained of pain at a corresponding point on the right side

The diagnosis I made was calculous pyelitis in a horseshoe kidney the stone being located at the lower pole of the left kidney (A in figure) This diagnosis was confirmed by operation in which I was assisted by my house surgeons Mr J M Robertson and Mr Thomas R. Wilson The patient made a good recovery and was dismissed from the home in four weeks

Glasgow

Corrigendum.—Figs 1 and 2 of Dr J S B Stopford's article on Thermalgia (Causalgia) in last week's issue should be transposed Before operation analgesia was more extensive than anæsthesia a relation which was reversed by the operation

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A CASE OF CLAUSTROPHOBIA

BY W H R RIVERS M D LOND, F R C P LOND, F R S,

TEMPORARY CAPTAIN R.A.M C MEDICAL OFFICER CRAIGLOCKHART WAR HOSPITAL, EDINBURGH

THE case I am about to record is that of a medical man aged 31, who from childhood has suffered from a dread of being in an enclosed space, and especially of being under conditions which would interfere with his speedy escape into the open

History of Patient

His first memory of this dread goes back to the time when at the age of 6 he slept with his elder brother in what is known in Scotland as a box-bed. The bed stood in a recess with doors which could be closed so as to give the appearance of a sitting room The child slept on the inner side of the bed next to the wall, and he still vividly remembers his fear and the desire to get out of bed, which he did not satisfy for fear of waking his brother He would lie in a state of terror, wondering if he would be able to get out if the need arose

His next memory bearing on his phobia is of being taken to see some men descending the shaft of a coal pit There came to him at once the fear that were he going down something might happen to prevent his getting out He remembers that whenever in childhood he was taken for a journey by train he dreaded the tunnels, and if by chance the train stopped in a tunnel he feared that there might be an accident and that he would not be able to get out This fear of tunnels became worse as he grew older When he began to go to the theatre or other crowded building he was always troubled unless he was near the door, and he was never happy unless he could see a clear and speedy mode of exit. He would never travel by the tube railway, and remembers his horror when on one occasion he had to do so As long as he can remember he has felt an intense sympathy whenever he has read of prisoners being confined in a narrow cell and he has always been greatly disturbed by tales of burial alive

He was always very nervous and excitable as a child and suffered from night terrors He has been liable, as long as he can remember, to worry without knowing why When about 12 years old he began to stammer, ascribing its onset to the imitation of a school fellow It soon passed off, but ever since he has been liable to stammer when out of health

During boyhood he had occasional attacks of sleeplessness, loss of appetite and inability to work. When about 22 years of age he decided to go in for medicine, and while reading for the Preliminary had an attack of this kind more severe than usual, which prevented his working for some time A similar attack during the second year of his medical studies made him fear that he would have to give up medicine, but the leisure of a vacation restored him, and he completed his medical course While serving as house surgeon he again broke down in health, but managed to finish his period of office and then did very light work for nine months

About six years ago while a medical student, he heard of a German, whom I will call A, who received patients into his house in order to cure them of stammering and other nervous ailments He stayed with him for two weeks, the treatment consisting mainly of a variety of suggestion in which the patients were told to relax their muscles and concentrate their minds on the qualities they desired to attain A. had recently become acquainted with the work of Freud, and had visited Vienna in order to learn something of his methods Some time later the patient again put himself under the care of A in order to undergo a course of psycho-analysis The analyst in this case does not appear to have been acquainted with the method of free association, and after an unsuccessful attempt to carry out a series of word associations the process of psycho-analysis resolved itself into an inquiry into dreams In company with others the patient was instructed about Freud and his views He was told that the cause of his trouble certainly lay in some forgotten experience of childhood of a sexual nature When he related his dreams they were invariably interpreted by means of symbolism of a sexual character Thus if he had dreamed of water he was told that this indicated a wish for sexual intercourse It is a striking feature of the process of examination and treatment to which the patient was subjected that it failed to discover the special dread of closed spaces from which he suffered At this time he had not realised that his dread was exceptional or was capable of treatment He had supposed that everyone objected to conditions which were so trying to himself, and it was only on account of his stammering and his general nervousness that he had sought treatment *Consequently* he told A. nothing about his dread and the process of analysis failed to detect it. Not only did the analysis lead the mind of the patient exclusively in a sexual direction, but it also failed to discover or remedy the claustrophobia

This process of so-called psycho-analysis had no result which satisfied the patient On the contrary, after two months of it his sleep became so disturbed and his general condition so much the worse that he gave up the treatment and returned home Nevertheless, he was left with the firm conviction, which he retained till he came under my care, that the root of his troubles lay in some forgotten sexual experience This belief was so strong that he continued to search out for himself some forgotten experience of this kind but without success, and shortly before the outbreak of the war he was thinking of going to Vienna to consult Freud and find whether the master himself might not succeed in discovering the lost memory

War Experience

The outbreak of the war interfered with this plan At that time the patient was still suffering from the effects of his breakdown when a house surgeon, but as soon as he had recovered sufficiently he joined the R A.M C and went to France When he reached the front he had to live and work in dug outs and was at once troubled by the dread of the limited space, and especially by the fear that he might not be able to get out if anything happened His dread was greatly stimulated on his first day in a dug out when, on asking the use of a spade and shovel, he was told that they were to be used in case he was buried It was only when he found others living and working in comfort in dug outs that for the first time he realised the exceptional nature of his dread and recognised that he was the subject of an abnormal condition After two attacks of trench fever his dread was greatly accentuated and increased to such an extent as to make his life almost unendurable He slept so badly that he had recourse to hypnotics and often spent a large part of the night walking about the trenches rather than remain in his dug-out His health became so impaired that he was advised by his commanding officer to consult the A D M S, who sent him into hospital He was there treated by rest and was given paraldehyde every night He was told to keep his thoughts from his war experience and to dwell exclusively on pleasant topics such as beautiful scenery

After three weeks in hospital in France he was sent to London where he was again treated by rest and hypnotics When he came under my care he had been sleeping very badly in spite of the hypnotics He had been having terrifying dreams of warfare from which he would awake sweating profusely and think that he was dying These dreams had become less frequent but still occurred He stammered very badly and was often depressed and restless He found it difficult to read anything which required a mental effort and complained that his memory was defective, especially for recent occurrences He had occasional frontal headache and suffered from pain and discomfort after food, which he ascribed to the paraldehyde he had taken, and he was liable to alternating constipation and diarrhœa His deep reflexes were somewhat exaggerated

In obtaining his history I learnt about his interest in Freud and about the previous attempts to remedy his condition by means of psycho analysis It was only when I explained to him my views concerning the exaggerated interest in sex shown by Freud and his disciples that he learnt for the first time that forgotten experience of other than a sexual kind might take a part in the production of nervous states It was agreed that "psycho-analysis" should be given a fresh trial from this point of view

Fresh Trial of Psycho analysis Memories Recalled

The next interview was devoted to a full inquiry into his previous experience in analysis, the results of which have already been given As a preliminary to the following sitting I asked him to remember as fully as possible any dreams he might have in the interval, and to record any memories which came into his mind while thinking over the dreams He was instructed to come to me at once if he had any dreams of interest A few days later he related a dream which I do not propose to consider here, because it does not directly concern the claustrophobia The interest of the dream from the present point of view is that in thinking over the dream there had come into his mind an incident going back to the age of 6 which had, so far as he knew, gone completely out of his mind for many years. Taking the dream and memory as a starting point, he was led on to recall two other incidents of this time, one of which seemed to be definitely related to the dream All three incidents had been completely forgotten till recalled on this occasion, though they were all associated with a strong emotional tone and had affected him greatly at the time None of them seemed to have any relation to the claustrophobia, but they were very useful in demonstrating to the patient the value of analysing dreams on a basis other than that of sex, and in showing him that the method, if persevered in, might lead to something more obviously related to his symptoms

Three nights later he had another dream As he lay in bed thinking over the dream, there came into his mind an incident dating back to 3 or 4 years of age which had so greatly affected him at the time that it now seemed to the patient almost incredible that it could ever have gone out of his mind, and yet it had so completely gone from his manifest memory that all his attempts at psycho-analysis, prolonged over years, had failed to resuscitate it The incident was of a kind which convinced him at once that the long sought memory had been found Unfortunately, his interest in the regained memory was so great that the dream which had suggested it was completely forgotten and all attempts to recall it were unavailing

The incident which he remembered was a visit to an old rag and bone merchant who lived near the house which his parents then occupied This old man was in the habit of giving boys a halfpenny when they took to him anything of value The child had found something and had taken it alone to the house of the old man He had been admitted through a dark narrow passage from which he entered the house by a turning about half way along the passage At the end of the passage was a brown spaniel. Having received his reward the child came out alone to find the door shut He was too small to open the door, and the dog at the other end of the passage began to growl The child was terrified His state of terror came back to him vividly as the incident returned to his mind after all the years of oblivion in which it had lain The influence which the incident made on his mind is shown by his recollection that ever afterwards he was afraid to pass the house of the old man, and if forced to do so always kept to the opposite side of the street

Ten days later the patient dreamed that he visited Edinburgh for the purpose of taking the Diploma in Psychological Medicine As he lay in bed thinking over his dream and its possible antecedents he found that he was saying to himself over and over again the name "McCann" He could not at first remember that he knew anyone so called, but it suddenly flashed on his mind that it was the name of the old rag and-bone merchant in whose house he had been terrified.

One thing was needed to make the story complete. It seemed possible that these thoughts recalled in consequence of thinking over dreams, might be purely fictitious It might be that in his intense desire to find some experience of childhood which would explain his dread the patient might have dreamed or thought of, purely imaginary incidents which had been mistaken for real memories Luckily the patient's parents are still alive and on inquiry from them it was learnt that an old rag and bone merchant had lived in the neighbourhood in such a house as the patient remembered and that his name was McCann Until they were told some 27 years later they had no idea that their child knew anything of the old man or had ever entered his house

Forgotten Experiences and their Revival

I propose first to consider this case in so far as it affords evidence concerning the forgetting of unpleasant experience and the possibility of recalling such experience to manifest memory It is well to distinguish this problem from the quite separate problems how far such forgotten experience acts as the basis of morbid states and how far the recalling of the forgotten experience to manifest consciousness is of value therapeutically

The main facts of the case from the first of these three points of view is that by following a certain procedure there came back to the patient a memory from early childhood which had, so far as he knew, been completely absent from his manifest consciousness for about 27 years It had been so completely forgotten that even six years devoted to research into his infantile memories had failed to recall it If it had not been for the independent confirmation of his parents the whole memory might have been dismissed as fictitious, but their evidence makes it clear that we have to do with the revival of a genuine memory

It will be well here to consider the conditions which led to the recovery of this long forgotten incident The facts that it should have eluded observation although diligently sought for six years, and that it should have come so readily to light at a later time, suggest that there was something faulty in the process by which the search had been conducted before the patient came under my care We may inquire why his previous attempts to discover the memory had failed when they succeeded so rapidly as soon as the subject was approached with a different method.

One cause of failure is undoubtedly to be found in the previous direction of the patient's thoughts exclusively in the direction of sex. He had been assured that the memory to be revived would certainly be concerned with sexual experience All his endeavours had been devoted to the end of finding such an experience We could hardly have a better example of the obstruction placed in the path of knowledge by the exclusive preoccupation of the Freudian school with the problem of sex In dealing with this subject on another occasion[1] I have dwelt on the part taken by the exaggerated, if not morbid interest in sex in producing the widespread prejudice against Freud's psychology which undoubtedly exists The case I now record shows that the evil goes much deeper, and that the exclusive interest in sex may actually obstruct the discovery of an infantile experience which furnishes as good an example as could be desired of unconscious experience and of the possibility of recalling it to manifest memory

A second, and perhaps more important, cause of failure is that until the patient came under my care his attention had not been especially directed to his claustrophobia It was only when he recognised that his fear of being in a dug out in France was not shared by others that he realised the specific character of his dread It was only when he came under my care that for the first time the process of analysis started from and centred round the dread of closed spaces Throughout all our conversations the attention of the patient was turned in this direction, thus leading the dream thoughts to occupy themselves with this topic until they reached and brought to the surface the memory which had lain dormant for 27 years The case well shows that the process of analysis by which forgotten experience is laid bare is not a loose method of examination which may start anywhere and be carried on anyhow but, if it is to be successful must be based on definite principles It must start from some special symptom or other experience, and must be conducted with a definite relation to the experience it is desired to reach

The previous failure of the patient to recover his infantile experience is to be explained partly by the exclusive direction of his interest in the direction of sex, partly by the process of examination and inquiry having failed to start from the dread of closed spaces to which the infantile experience has so obvious a relation A problem which remains for consideration is whether the later success was merely due to these two faults having been remedied or whether there was any positive virtue in the special method which was then employed This method is essentially that of free association as understood by Freud—the method of 'abstraction' of Morton Prince—but starting from the incidents of a dream and carried out during the time immediately following the dream In my own experience I have found this time especially favourable for the recovery of memories the state of half wakefulness seeming to be especially favourable to the freedom of association The employment of free association under these conditions must except under very special circumstances, be conducted in the main by the patient himself. The physician helps in the process by leading the waking thoughts of the patient in a direction calculated to awaken the desired experience, and he may also, as in the present case, help to elicit memories other than those which are recalled immediately after the dream, but the method is only suited to intelligent and well instructed patients

The procedure followed in this case differs widely from that in which dreams are usually employed by practitioners of psycho-analysis, who seem to use dreams chiefly as the means of obtaining clues to be investigated on other lines In the most recent exposition of the theory of psycho analysis[2] the value of dreams is rated very low, if, indeed their use is not altogether deprecated The success which has followed the special mode of utilising dreams now described, which has also attended other cases, suggests that Jung's condemnation of dreams is due to a failure to recognise certain ways in which they may be of use The interpretation of dreams has become in the hands of most of Freud's disciples a sphere in which free rein is given to the wildest speculations, and if this kind of process is carried into the clinical field it is not surprising that so relatively judicious a student as Jung should have been led to discount their value Here, as in every other of its aspects, the whole theory and practice of Freud and his disciples need thorough revision. When looked at from a new point of view, dreams may again take a prominent place among the means towards the recovery of a forgotten and repressed experience[3]

Relation of Forgotten Experiences to Pathological States

Thus far I have dealt only with the evidence provided by this case of claustrophobia in favour of the reality of unconscious experience and with the means by which it may again come to form part of the system of fully conscious memories I have now to consider how far this case supports the contention that the forgetting of such unconscious experience acts as the basis of pathological states In the case before us the pathological state is a definite example of a phobia. The problem for decision is whether the specific dread from which the patient has suffered for so many years is the direct product of the forgotten experience of his childhood. The whole character of the infantile experience is one well calculated to produce such a fear as that from which the patient has so long suffered The situation of a small child of 4 in a dark narrow passage with a strange growling dog as his sole companion is certainly one we might well expect to produce a lasting impression It is noteworthy that the infantile experience accounts for the special feature of the claustrophobia that it is not so much a closed space itself which the patient dreads but it is the fear that he may not be able to escape which especially haunts his mind The inability of the child of 4 to open the door leading him from darkness and danger into light and safety seems to have been perpetuated in the special character of the claustrophobia afflicting the man of 30 Throughout his life it has been when he sees no way of escape, whether at a distance from an exit in a tunnel, or tube railway, that the dread comes upon him, and when he went to France it was more especially the fear of being buried in his dug out which drove him to leave conditions usually regarded as those of comparative safety to wander in the more dangerous trenches. This close correspondence between the infantile experience and the dread of later life can leave little doubt that the two are definitely related to one another and that the infantile experience was the primary condition of the claustrophobia. It would seem probable that the phobia was accentuated and fixed later by his experience at the age of 6 when night after night he lay in the "box bed," fearing to show any signs of fear owing to the presence of his brother The process seems to have been one in which the great potentialities of an infantile impression were developed and fixed so that the emotional condition associated with the experience of the infant came to form part of the constitution of the boy and man It is possibly owing to this later experience that the dread which was to occupy and often master the mind of the patient for nearly 30 years had as its object the narrow space rather than the dog which was the more immediate cause of the child's terror So far as the patient remembers he has never had any fear of dogs, but it is *possible that there was a* period when the dread of the child was also directed *to the* animal, and that it was only the later and long continued terror at the age of 6 which transferred the dread so completely to the other chief element of the earlier experience

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[1] THE LANCET June 16th 1917 p 912.

[2] C G Jung: The Theory of Psycho-analysis New York 1915, p 6.

[3] Since this was written I have found that the method used in this case agrees closely with that of Dr Meyer Solomon (Journ Abnorm Psych vol viii. 1913-14 p 73)

Theory of Repression and Active Forgetting

Another problem for consideration is how far his case supports Freud's *special theory of repression and active* forgetting What is needed here is some definite explanation of the process by which the acute and fully conscious terror of the child became converted into forgotten experience which was only restored to manifest consciousness after many years What can have been the nature of the process by which the fully conscious and vivid terror of the infant of 4 was converted into something unknown and unsuspected working in subterranean fashion to reproduce the state of dread or terror whenever the patient was exposed to conditions similar to those of his infantile experience? This topic belongs to the most difficult and obscure department of the subject In the case of adults there is reason to believe that the process of active forgetting or repression may in some cases take place more or less suddenly as the result of a shock or during a period of unconsciousness or delirium On the other hand, it may be the result of a long continued process of conscious or subconscious exclusion from attention It is difficult to imagine the latter kind of process taking place in a child of 4 or 5 It seems likely that it was the result of an illness in which the forgetting was assisted by some condition which produced an obvious modification of consciousness I therefore asked my patient to make inquiries into the history of his early illnesses He found that when between 2 and 3 years of age he had an attack of scarlet fever, so severe that the doctor despaired of his recovery Between 5 and 6 he had enteric fever, which does not seem to have been especially severe When about 6 or 7 years old he had an abscess in the shoulder which lasted some months Later he had pleurisy and was delirious, and there was again for a time little hope of his recovery This was followed by an abscess in the foot which took some months to heal The patient thus had a succession of severe illnesses both before and after the incident which seemed to have determined his claustrophobia The scarlet fever probably so weakened his health as to make him susceptible to dissociation or to enhance an innate susceptibility in this direction, while one of the later illnesses may have provided an opportunity for conditions which would assist the process of dissociation itself

Therapeutic Value of Recovery of Forgotten Experience

I have now considered how far we can accept this case as evidence for the reality of unconscious experience and for the view that such experience is the basis of the pathological state of claustrophobia There still remains the question how far the case supports the contention of Freud that the bringing of unconscious experience to light is of therapeutical value Two problems should be carefully distinguished It is one problem whether the restoration of a forgotten experience to manifest memory relieves nervous morbid states, and it is a different problem to discover through what processes the "cure" works

As regards the first problem, there is no doubt that the recovery of the forgotten experience of my patient had a great effect on his condition A few days after recalling the memory he sat without disturbance in the middle of a crowded picture house under conditions which for years before would have given him the most serious discomfort and dread The patient himself was so confident that he wished me to lock him in some subterranean chamber of the hospital, but I need hardly say that I declined to put him to any such heroic test He has since travelled in the tube railway with no discomfort whatever, so that the ordinary conditions which had brought his phobia into activity for many years no longer have this effect A striking sequel of the recovery of his infantile memory is that terrifying dreams of being unable to escape from enclosed spaces from which he formerly suffered now trouble him no longer, and he has recently had a dream, to be related elsewhere, in which he found himself in a narrow cell in the company of a bloodhound, and was amazed in the dream that he should be so happy and comfortable in this situation

The effect on the other symptoms from which he was suffering as the result of his war experience has been less satisfactory His stammering improved to some extent, and still more striking than any objective improvement was the disappearance of a dread of stammering which had been a constant source of trouble since coming home from France. He became able to take plenty of physical and mental exercise, but he continued to sleep badly and to be troubled by disturbing dreams of warfare. The continuance of these symptoms, however, is certainly due to the fact that though his claustrophobia had formed the starting point of his general war neurosis the neurosis is now kept going by other forms of anxiety

In connexion with his broken sleep and disturbing dreams of warfare one point may be considered In entering upon the line of treatment which I have described in this paper I hesitated whether I was justified in possibly adding to his other causes of loss of sleep by getting him to attend to and think over his dreams The progress of the case speedily removed any apprehensions of this kind. After his infantile memories had been discovered he continued to be interested in his dreams and their analysis, but did not find that the process interfered with his sleep Even while on the search for forgotten memories he did not attempt any analysis of that class of dream dealing with scenes of war, which especially disturbed his sleep

The Mechanism of Recovery

The last problem I have to consider is concerned with the agency by which the recovery of the lost memory has so greatly relieved the claustrophobia of the patient According to Freud and his disciples the raising of repressed experience to the surface is in itself sufficient to bring about the disappearance of morbid states, and they often cite this curative action as evidence in favour of the general theory of repression The case before us might well be regarded as striking evidence in favour of their view The recollection of the incident of his childhood has been followed by the disappearance of the dread which has been with him for so many years It might seem at first sight evident that this disappearance has been the direct result of the reintegration of the forgotten and dissociated experience with his ordinary personality Another possibility must, however, be considered

The whole procedure of psycho analysis is calculated to bring into play the agencies of faith and suggestion Thus the patient had been assured from his first attempt at psycho-analysis that the recovery of a forgotten experience of childhood would effect a cure It was evident when he came under my care that in spite of previous failure his mind was still dominated by the belief that if the right experienc could be found he would recover When the memory of th passage and the dog came back to him his mind was fille with a sense of comfort as regards his illness such as he ha not known for years

I did nothing to enhance his confidence in the Freudia interpretation of the process by which the recovery of a los memory produces a cure but in spite of my own scepticis concerning the mechanism of recovery, I was careful to sa nothing which would have disturbed his faith This fait was so great that it cannot be excluded as a factor in th therapeutical success of the revival of the forgotten experi ence His case has one feature, however, which suggests, it cannot be said to prove, that the recovery of the memor rather than the influence of faith and suggestion was th essential agent in producing the disappearance of his drea For years the patient had believed that the recovery of th right memory would cure his stammering and get rid of h general nervousness For reasons already considered, h faith had not had the state of claustrophobia as object Nevertheless, it was this symptom which was greatly relieved, though we cannot yet say that it has bee wholly cured The stammering and general nervousness, the other hand, which had throughout been the speci objects round which his faith was working, though alter for the good, have been relieved in far less degree Th argument is not conclusive, because the direction of th patient's attention towards his claustrophobia, which was essential element of my treatment, may have acted as instrument by means of which the agencies of faith an suggestion already working in the patient's mind were turn towards his claustrophobia.

PERFORATIONS OF STOMACH AND DUODENUM

BY JAMES TAYLOR, F R.C S EDIN ,
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As I have had the privilege of being emergency surgeon in the central surgical military hospital of a large camp, most of the cases requiring immediate surgical attention have come under my care, and perhaps no group of cases has been of more interest than the gastric and duodenal perforations One might think that in a military camp one would get these cases sent into hospital early, so that the surgeon would have the best possible chance, but for various reasons this is not so, very many of the cases being admitted in the later stages of their illness after general peritonitis has developed. The condition in which one gets cases differs very little from that of civil practice We have had a good deal of trouble with chest complications, and I think this is due to the soldier, exposed to unaccustomed conditions, suffering much more from catarrh of the respiratory tract than civil patients usually do

The type of ulcer was usually the chronic variety with a great deal of induration around, and there was usually a definite history of gastric trouble over a long period The man entered the service with an ulcer, and this serious complication was no doubt precipitated by the impossibility of the sufferers avoiding the more indigestible articles in the Army dietary

As regards treatment, it has been carried out on the usual lines Most of the cases were drained. Very little time was spent over swabbing out the extravasated fluid, and only in one case, where the abdomen was simply full of thick food stuffs was any irrigation with saline attempted Where the perforation was in the region of the pylorus or duodenum, if the patient was in fair condition, a gastro-enterostomy was performed In closing the leak omentum was stitched over to supplement the invaginating sutures

Case of Duodenal Ulcer Prodromal Symptoms, Chest Involvement

The first case I mention is of interest on account of the prodromal symptoms of perforation and as exemplifying that chest involvement which I have mentioned.

Private W aged 27 was admitted complaining for the last few days of pain in the upper abdomen His pulse and temperature were normal and examination only showed some slight tenderness and resistance over the right upper rectus At 2 A.M the following morning he was seized with sudden severe pain in the epigastrium. He was seen by the orderly officer who ordered an enema This produced no result and I saw him two hours later He was pale suffering from considerable shock, and the abdomen was rigid and tender

The abdomen was opened through the right rectus A large perforation with marked induration round it was found on the right surface of the duodenum one inch beyond the pylorus There was much difficulty in getting the opening closed, and when this was done a posterior gastro-enterostomy was performed A tube was inserted into the pelvis through a small wound above the pubes Patient made an uneventful recovery as far as the abdomen was concerned The wound healed by first intention He had no pain or tenderness in the abdomen after the first few days

On the fourth day he began running a temperature which reached a maximum of 103·2° F on the eleventh day It gradually fell after this but on the fortieth day it was still 101° in the evening and showed a large daily fluctuation At the left base the percussion note was impaired The breath sound was tubular Sometimes it was distant and sometimes apparently quite superficial Pectoriloquy was distinct Repeated exploration of the pleura with a hollow needle gave a negative result X ray examination showed marked mottling and increase of density on whole of left side of chest These signs were most intense at the base Under an anæsthetic a needle was pushed through the diaphragm but only blood was obtained. Patient was sent to an auxiliary hospital and on his return from this three months after his perforation he still had a temperature and a very purulent spit A definite abscess was now localised in the base of the left lung A rib was resected and the cavity drained after which patient made a rapid recovery He was discharged from the Army but I have heard since that he is perfectly fit and able to work daily although there is a small sinus through which a slight discharge and a little air escape at times

Subphrenic Abscess

In three of the cases fluid in sufficient quantity to cause cardiac displacement appeared at one of the bases but in only one of the series did a definite subphrenic abscess develop In no case was there ever any sign of pelvic abscess The subphrenic abscess developed in a patient who had been perforated for 27 hours before operation and he was in addition somewhat up in years

Lieutenant Colonel C aged 47 who had spent many years in India had had dysentery and had also for many years suffered from severe pain in the right hypochondriac region (regarded as renal colic he had passed blood in his urine on one occasion) was sent to hospital with diagnosis of renal calculus. Patient had been ill for 25 hours. He was much collapsed. The abdomen was greatly distended and rigid all over A diagnosis of perforated duodenal ulcer was made and operation proceeded with.

The abdomen was found full of fluid. There was a considerable amount of peritonitis but not as much as one might have expected The ulcer a chronic one, was on the right surface of the duodenum Patient was so ill that very little could be done The aperture was closed a large tube inserted into the pelvis through a suprapubic wound and then the central incision stitched up The patient would not stand any swabbing out

During the first four days patient gradually improved Then his temperature and pulse began to go up and he became exceedingly tender under the right costal margin On the tenth day after operation there were signs of a definite abscess in this region An incision was made parallel with the intercostal nerves and a quantity of thin, foul smelling pus allowed to escape A drainage-tube was inserted. Patient was better for a few days but still the temperature did not drop to normal There were impaired percussion and diminished respiratory murmur at the right base with displacement of the heart to the left Exploring syringe showed a clear fluid in this pleura. On the twenty fifth day patient was again given an anæsthetic and through the old incision which was enlarged, two large drainage tubes were passed up between the liver and diaphragm into a right extra peritoneal subphrenic abscess. Patient gradually improved after this but the fluid at the base remained so long that it was necessary to aspirate it. He was discharged with a sinus still persisting under the costal margin This sinus is now soundly healed

Case of Pyloric Ulcer Operation, Gastro enterostomy a Week Later

Another case which I propose to describe shows how important a gastro-enterostomy is in many of these cases

Private G aged 49 was admitted 12 hours after perforating The pulse was very poor Operation was proceeded with at once The opening was found exactly over the pylorus so that it was impossible to avoid increasing the constriction that almost certainly existed. Patient was so ill and was taking his anæsthetic so badly that it was thought inadvisable to spend the extra time necessary to do a gastro enterostomy The pelvis was drained and the patient sent back to bed The case was further complicated by an impermeable urethral stricture

For two days patient went on very well Then vomiting began The stomach, which was found greatly distended, was washed out with a tube There was no more vomiting for two days but at the end of this time there was great gastric distension again, and patient began to bring up everything he took. A wash-out set him right but when it occurred a third time patient was becoming very weak, and it was obvious it was going to be impossible to feed him.

Under stovaine the abdomen was opened again A posterior gastro-enterostomy was done As the jejunum was much distended it was opened and several loops emptied the aperture being closed with a purse-string suture The abdomen was then stitched up Patient was very collapsed for a few hours but soon recovered By the use of eserine and pituitary extract the bowels were got moving and in a few days he was able to take light food.

He went on very well for 12 days, when he developed obstructive symptoms A Paul s tube was put into a distended loop but patient died *Post mortem* examination showed no mechanical obstruction. There was very little sign of peritonitis Patient seemed to have died of paralytic ileus

Mortality

Perforations of the stomach and duodenum are very serious surgical conditions Recovery apart from operation is exceedingly rare—put by some authorities at 5 per cent —and until recent years the death rate was exceedingly high even in cases operated on. The most important factor in the prognosis is the time that intervenes between perforation and operation The improvement in results is due partly to early recognition of the condition in a larger proportion of cases and partly to improvement in the technique

A collection of cases operated on by Mayo Robson, Finney, Moynihan, Christy Wilson, &c , showed the following result Total number, 486 , recovered, 227 , died, 259 Percentage recovery, 44 6

Sir Berkeley Moynihan in 1914 published the following table showing the effect of loss of time before operation —

	0–12 hrs.	12-24 hrs	24–36 hrs	36–48 hrs
Lived	36	9	6	1
Died	2	11	1	5

The results of the Edinburgh surgeons, Caird, Stiles, Miles, and several others between 1910 and 1913 were as follows Total number of cases, 80 , total recoveries, 53 , number of fatal cases, 27 Percentage death rate, 34 2

Duodenal perforations give a larger proportion of recoveries than gastric ones Mitchell, of Belfast, records a series of 16 cases of the former without a death

I had altogether 20 cases, and of these 5 died—death rate 25 per cent —but 2 of these deaths occurred about three weeks after the operation , 1 died of pneumonia on the twenty first day and the other, mentioned above, of ileus on the nineteenth day Of the other 3, 1 had been perforated for over 48 hours before operation Another, 24 hours perforated, lived a week and then perforated a second time A second operation was done but failed to save his life Rather more than half the cases were perforations of the stomach and there were four deaths in the gastric series as against one in the duodenal

There were two cases of second perforation—one, a fatal case, I have just mentioned, the other had been operated on four months before I saw him for a perforated ulcer He came under my care, suffering from symptoms of perforation again On opening the abdomen great matting was found round the pylorus and duodenum, with stomach contents leaking from among the adhesions It was impossible to define any definite opening The omentum was sutured over the area of the leak and a posterior gastro-enterostomy performed Patient made an excellent recovery

The Question of Primary Gastro enterostomy

There is considerable difference of opinion about the advisability of primary gastro-enterostomy, and this is a subject on which there will always be disagreement, for every case must be considered on its merits and no hard-and fast rule can be laid down, but the record of results of the various surgeons would rather indicate that in many cases the anastomosis should be done at once Against it Corner points out that a third of the cases are cured by suture only He thinks that the operation should be left to be done later, and it may be found that it will not be necessary to do it at all. The Edinburgh school are of opinion that omitting the operation has caused no bad result In this they are in agreement with Collinson, of Leeds, and Ellsworth Elliot On the other hand, Carwardine, in reporting 12 cases of perforation with 11 recoveries, says primary gastro enterostomy was done in three and these were all among the recoveries Mitchell, of Belfast, reports 28 cases of perforation of the duodenum with three deaths Seven of them, all recoveries, had gastro-enterostomy done Of the other cases one required the operation on the eighth day and another in 18 months, and other two of them had symptoms calling for the operation The case of Maylard and Andrews in which perforation took place on three successive occasions, with an interval of three and a half years between each, is another argument in favour of the operation

In my series primary gastro-enterostomy was done in six of the cases These were all recoveries and they ran altogether a happier course than the ones in which it was not done It might be said that the operation was done in the cases that were not very ill, and in which the prognosis was more favourable in any case In mine this was usually so, but not always In one of my cases the patient was an alcoholic of nearly 50 years, who had been perforated for 20 hours before operation So much narrowing was caused in suturing the ulcer that a new opening from the stomach was necessary If it is a perforation of a chronic ulcer in the region of the pylorus there is sure to be constriction, and with the additional narrowing caused by suture of the ulcer this constriction must be made worse In one of my cases I had to do a gastro-enterostomy at the end of a week, and in another one at least there were symptoms of pyloric stenosis afterwards Also, as I have mentioned already, one of my cases had been operated on for perforation previously In cases of ulcer on the lesser curvature or anywhere away from the pylorus suture cannot give rise to additional trouble, and as improvement after gastro-enterostomy is only expected in a third of the cases of simple ulceration it does not seem advisable in cases that have perforated to prolong the operation for such a doubtful chance of improvement

Prognosis

The case operated on longest after perforation was over 48 hours, that with recovery 27 hours The oldest patient was 63 years He made a good recovery

The life of most of these patients was saved, and most of them would be quite useful citizens afterwards, but I am afraid very few of them would be of much use to the Army, although many—in fact, most of them—returned to duty I fear, however, that a large proportion of them would have a recurrence of gastric symptoms and have to be discharged later It is difficult to render these men fit to take the Army diet I have noticed among cases that I have operated on for simple gastric or duodenal ulcer that although they were greatly improved and seemed perfectly well while they were in auxiliary hospitals, they relapsed a short time after their return to duty and ordinary fare It would take about a year of dieting to make these men right On the other hand, officers, who can have a certain choice of food, have made perfect recoveries after operation. and have been able to return to full duty in a comparatively short time

I am much indebted to Lieutenant-Colonel Wilson for permission to use the hospital records, and to Major Gordon Taylor for his kind advice and assistance

Reviews and Notices of Books.

Health and the State By WILLIAM A. BREND, M A. Camb, M D (State Medicine), B Sc Lond, of the Inner Temple, Barrister at-Law, Lecturer on Forensic Medicine, Charing Cross Hospital London Constable and Co 1917 Pp 354 Price *10s 6d* net

GREAT efforts have been made by Parliament in recent years, upon the initiation and advice of responsible Ministers, members of various Governments, to improve the health of the community at the charge of the State Dr Brend has set himself the task of pointing out methodically, and with the support of established facts and statistics, that the value of these efforts has been unduly small, that grave mistakes have been made, and that money has been spent with disproportionate results He asserts that there has been a general failure to achieve success, and attributes it to the means adopted to initiate and carry out reforms and to the system by which legislation is introduced by a Minister who may not himself be master of his subject and who, for all that Parliament and the country knows, may not even be following the advice of the departmental experts supposed to be behind him

The administration of the laws relating to the public health is a very complicated business, entrusted to a large number of public authorities who are not coördinated, and whose duties overlap at some points and at others leave important sections of the ground untouched, of this the medical profession, or those members of it who are brought into contact with public health questions, are fully aware, and these should be interested in Dr Brend's exposition of the facts and deductions therefrom Much more so, however, should his book be read by those members of the legislature who treat all Bills before Parliament as political measures, to be voted upon in strict conformity to party lines of action, or those who believe that on matters where experts agree amateurs may tender valuable advice, although no amateur need devote any study to the questions In supporting the formation of a Ministry of Health to investigate the causes and distribution of disease and to evolve suitable measures for local authorities to carry out, Dr Brend examines the various causes which lead to disease and loss of life, and describes the measures adopted hitherto in order to show the nature of the errors which, in his view, lead to misdirection of energy and useless expenditure Here he enunciates opinions which themselves may attract criticism from his medical colleagues and the discussion of which may prove extremely useful He gives prominence, for example, to the question whether the infectious nature of various diseases and the importance of segregation as a preventive of the spread of some illnesses may not be exaggerated, and he makes the same suggestion of exaggeration with regard to the view that infant mortality is largely a result of pre natal conditions or maternal ignorance and neglect His object here is to emphasise the greater urgency of the removal of those post-natal factors contributing to destroy infant life, but over which parents in the humbler classes of society have no control, obliged as they are by the circumstances of industry to live in crowded areas. In criticising the National Insurance Act, Dr Brend describes it as the most ambitious piece of public health legislation ever carried through in the country, and says "No previous measure has directly affected so large a number of persons, involved so great a cost, made such demands upon administration, or been introduced with such lavish promises of benefit to follow, and no previous measure has ever failed so signally in its primary object", and he severely condemns the holding out of alleged successful national insurance in Germany as justifying the introduction of legislation upon similar lines here As will be seen, there is a tendency here to beg the question of what was the "primary object" of National Insurance in the mind of the statesman mainly responsible for it and of his followers Such a minister might reply by suggesting that legislation is largely a matter of politics and of feeling the way for desired reform along lines of least resistance

When the National Insurance Act was introduced with picturesque oratorical descriptions of future benefits to accrue directly from it, reforms in land tenure, housing and conditions of labour might have been attempted, but might have failed to secure the approval of Parliament These, however, have probably been advanced several stages upon their road to fulfilment by the knowledge of disease affecting the working classes and of the failure of extended medical treatment to cope with it, as well as by the general stimulating of national interest in disease and its problems In this connexion criticism such as that levelled at National Insurance by Dr Brend, iconoclastic as it may appear to some, may be of very definite usefulness in paving the way to more general and far reaching efforts in the interest of the public health But it seems almost impossible that such a consummation will be attained without a general effort on the part of legislators, and, it should be added, of their constituents, to study and to understand the nature of the problems involved before attempting to formulate solutions for them This comprehension of what is required is all the more needed on account of the demands which legislation such as that suggested is likely to make upon private interests, and the multiplicity of the interests certain to be involved

Clinical Surgical Diagnosis for Students and Practitioners By F DE QUERVAIN, Professor of Surgery at the University of Basle. Second English edition Translated from the Fifth Edition by J SNOWMAN, M D London John Bale Sons, and Danielsson Pp 841 Price 35*s* net

IN reviewing the fourth German edition of this book four years ago we expressed the opinion that there was no published work on diagnosis likely to give greater help to the student, qualified or unqualified, in view of the clear statement in the text of the essential points of diagnosis and the abundance of well chosen illustrations It is therefore with special pleasure that we welcome a new English edition of the book, prepared by Dr Snowman from a fifth edition, in which Professor de Quervain had re-written the sections on stomach and duodenum, added nearly 100 new illustrations, and incorporated his recent experience in the diagnosis of the conditions special to war surgery The translation has been well done, and conveys the freshness and originality of the Swiss school of surgery, of which, now Kocher is gone, de Quervain is the most distinguished living exponent

Psychological Medicine By MAURICE CRAIG, M D Cantab, F R C P Lond London J and A. Churchill. 1917 Third edition Pp 484 Price 15*s* net

THE third edition of Dr Craig's well known manual has been enriched by additions on the subjects of the psycho neuroses occurring in men exposed to shell shock and strain of war, psycho-analysis, and the Mental Deficiency Act of 1913 The first-mentioned and urgently pressing subject is well summarised The symptoms of the effects of the various stresses of war are well recognised in these days, and do not turn out to be materially different from the symptoms of the traumatic neuroses, psycho-neuroses and psychoses of other origin, but the problems of diagnosis and treatment remain and are urgent in proportion to the huge number of patients affected The differentiation between the varieties of neuroses and psychoses, the limits to be assigned to the responsibility of patients in conscious and unconscious exaggeration and simulation of symptoms and the more exact determination of subtle organic lesions are factors of the hardest problems, academic and practical How are we to determine if a given symptom is of organic or functional origin or the result of weak or perverted volition? To such questions rough and ready or *ex cathedra* answers too often lead to therapeutic disaster Much uncured nervous or mental disorder is invalided out of the Army and the question at once arises whether this is due to therapeutic impotence or to the treatment of organic cases as functional and of functional cases as organic or to the failure of the diagnosis of exaggeration and simulation conscious or unconscious and the consequent neglect of the application of appropriate measures

Dr Craig is not much impressed with the value of psycho-analysis in the treatment of nervous affections due to the war but it must nevertheless remain true that it is only by psychological analysis that problems of psychic abnormality can be solved It is perhaps owing to the somewhat materialistic point of view of modern medicine that the results of treatment of abnormal psychic states are disappointing, and that so much of the successful treatment of such states lies to the credit of various sorts of charlatans With the elimination of the more extreme sexual hypotheses of the psycho analytic school and with an increase in width of their view we may hope for the solution of some of our difficulties in the determination of the validity of certain varieties of functional symptoms, whether somatic or psychic In the meanwhile, a combination of physio- and psycho therapy, as the author points out, appears to lead to the best results Unfortunately, the psycho therapeutist is born to his *métier*, and the difficulty of manufacturing him results in his being a scarce article Dr Craig's abstract of the Mental Deficiency Act will be found useful when, after the war, its provisions become more widely operative

With the additions enumerated and verbal emendations here and there the book will, we are sure, continue to prove its usefulness as a manual for students and practitioners

JOURNALS

The Quarterly Journal of Medicine Edited by WILLIAM OSLER, J ROSE BRADFORD, A. E GARROD, R HUTCHISON, H D ROLLESTON, and W HALE WHITE. Vol X., No 39 April, 1917 Oxford At the Clarendon Press London Edinburgh, New York, Toronto, and Melbourne Humphrey Milford Subscription price, 25*s* per annum Single numbers 8*s* 6*d* net each —The contents of this number are 1. Some Actions of Anæsthetics Analysed by the Observation of Altered Cardiac Relations to Calcium, by W Burridge In a previous paper by the same author the view was expressed that anæsthesia is a state in which the body calcium has to work at a disadvantage The experiments now recorded seem to establish the existence of a twofold action of anæsthetics on the heart—namely, a depressing action, which is reached quickly on addition of the drug to the perfusing solution, disappearing directly after its removal, and a favouring action which shows a time factor in its appearance, and especially in its disappearance Certain observations are also recorded upon the effects of too low calcium tension of the blood and the risks which it entails in anæsthesia, and the suggestion is made that this condition may account, in part at any rate, for the risk associated with anæsthesia in the subject of chronic alcoholism or hyperthyroidism 2 Researches on the Perfused Heart An Action of Strychnine, &c, with Some Remarks on Tetanus, by W Burridge This contains the record of observations made on similar lines to those recorded in the first paper A certain action is described as produced by strychnine atropin and ergotoxin in a certain type of abnormal heart and the conclusion is drawn that the particular effect produced by these drugs follows on their ability to cause a degree of relative calcification of the tissues The effects of the perfusion of solutions of relatively high calcium tension are considered, and are described as varying from the change of inhibition into excitation to the induction of tonic contraction 3 Researches on the Perfused Heart. Some Actions of Adrenin, together with Some Remarks on Addison's Disease, by W Burridge Adrenin is found to have a twofold action on the frog's heart—a primary depressing action resembling inhibition and an augmenting effect, the sympatheticomimetic action The relations between adrenin and calcium and the "balance" of the inorganic constituents of the blood or perfusing solutions are also studied, and on the basis of the results obtained it is suggested that the proportions of the inorganic constituents of blood are such as to render it an unsuitable medium for the manifestation of cardiac activity except in the presence of adrenin The origin of certain symptoms of Addison's disease is traced to such lack of balance 4 Pathology of Dysentery in the Mediterranean Expeditionary Force, 1915, by G B Bartlett. One of the general conclusions arrived at in this important paper is that the epidemic of dysentery among the troops upon the Gallipoli peninsula was due to amœbic infection In the examination of 477 stools of dysenteric appearance vegetative amœbæ of pathogenic type were found in 379 or 79 4 per cent., while at the post-mortem examination of 61 cases of dysenteric ulceration of the intestines amœbic lesions were found in 56, or 91 8 per cent Amœbic infection was more prevalent on the peninsula than the symptoms and signs in the hospital indicated, since on the routine examination of 652 stools not dysenteric in appearance vegetative amœbæ of pathogenic type were found in 118, or 18 per cent The epidemic of amœbic dysentery was accompanied by an epidemic of enteric fever, lesions of enteric being found in 41 of 142 complete necropsies, or 28 8 per cent The routine treatment adopted was that recommended by Sir Ronald Ross—viz , injection of emetine hydrochloride, administration of saline purgatives and bismuth mixture—and it was successful in curing amœbiasis in the majority of the cases. It is further of importance that the routine treatment in amœbic dysentery should be designed to combat bacterial infection of the intestines as well as to eliminate amœbiasis 5 Diabetes Innocens, by George Graham An interesting résumé, with a record of some cases showing that an innocent form of glycosuria occurs which is not associated with renal disease, and that it occurs in two types In one, the output of sugar is very small and is not appreciably altered by a dose of sugar, in the second, the output of sugar is greater and is increased to a certain extent by a dose of sugar

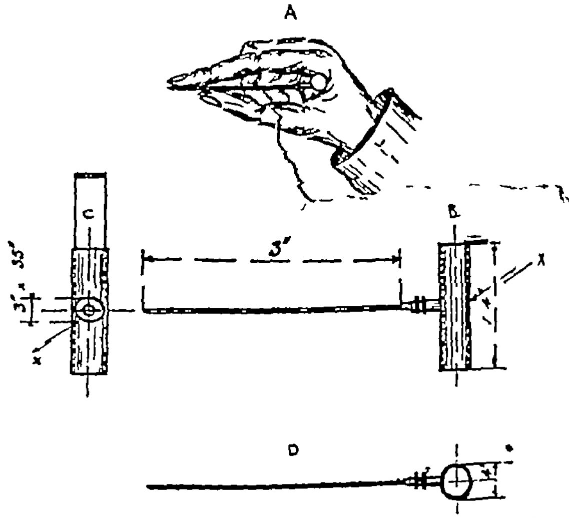
Brain A Journal of Neurology Vol XXXIX Parts III and IV , and Vol XL , Part I —Parts III and IV of Vol XXXIX are in one volume and comprise a series of very important papers Among these is Professor W D Halliburton's suggestive address as president of the Neurological Section of the Royal Society of Medicine on ' The Possible Functions of the Cerebro Spinal Fluid." Dr E G Fearnsides contributes an interesting and exhaustive article on intracranial aneurysms—a study of cases found post mortem at the London Hospital between 1907 and 1913, 44 cases out of 5432 necropsies in which examination of the head was permitted It would seem from the evidence afforded by these cases that syphilis is a very rare cause of intracranial aneurysm, and that the cases form two groups one associated with inflammatory conditions—e g , infective endocarditis—and one with arterial or cardio-vascular degeneration Dr Ffrangcon Roberts deals with the degeneration of muscles following nerve injury, and Dr Graham Brown and Dr R M Stewart contribute a paper on the recovery of power of localising and discriminating sensations in cases of cerebral lesions Mr E W Scripture gives graphic records of speech in cases of disseminated sclerosis which he claims to be helpful in the early diagnosis, and Dr J McIntosh and Dr P Fildes describe their experiments which endeavour to determine the factors which govern the penetration of arsenic and aniline dyes into the brain, and their bearing upon the treatment of cerebral syphilis —In Vol XL , Part I , Dr David Orr and Major R G Rows continue their researches into experimental toxi infection of the nervous system—the present paper dealing with the process as it affects the brain The second paper is by Dr George Riddoch on " Dissociation of Visual Perceptions due to Occipital Injuries with Special Reference to Appreciation of Movement," and is a valuable study of the material he has had at his disposal in the Knutsford Hospitals The third article is one by Dr Ramsay Hunt (New York) on " Progressive Atrophy of the Globus Pallidus," an article which goes far to support his contention that the juvenile form of paralysis agitans has as its pathological basis degenerative changes in the cells of that structure It is even suggestive that such changes may underlie ordinary cases of paralysis agitans, and it brings these into relationship with the cases described by Wilson of chronic lenticular degeneration

New Inventions.

A MODIFICATION OF A NEEDLE FOR LUMBAR PUNCTURE IN SYPHILIS

WHEN in a case of syphilis it is desired to obtain a sample of cerebro-spinal fluid for testing purposes, Professor Jeanselme, of the Broca Hospital, Paris, uses a platinum iridium needle three inches long and of a very fine calibre (outside diameter measuring 57 by Sturrett gauge) The fineness and flexibility of this needle make the operation of lumbar puncture practically painless, but the absence of a handle renders its manipulation a little difficult I find this can be overcome by fixing to the shoulder of the needle a hollow cylinder, open at both ends and with a window cut in its middle, as shown in the illustration The lumbar puncture is carried out as follows

The patient is placed sitting on a stool with elbows resting on knees, head bent down, and lumbar region thrust well out If confined to bed he should be on his side with knees and shoulders brought close together and the lumbar region arched out as much as possible A rubber tubing is stretched between the highest points of the iliac crests, and a mark made with an indelible pencil on each side of the spinal column This gives the upper border of the fourth lumbar spine The skin is now sterilised with absolute alcohol and anæsthetised by spraying with ethyl chloride. The needle, previously sterilised and dipped in sterile olive oil, is held in the right hand (see Figure, A) Then with the forefinger of the left hand feel for the most prominent spine at the level of the marks made with the indelible pencil, it is not always below the line drawn and may be either on the line or slightly above it Insert the needle in the middle line just beneath the finger with a sudden sharp jab, so as to go through the superficial structures, push the needle onwards until the dura mater is pierced The sensation imparted to the finger as the needle punctures the dura mater is quite characteristic. By keeping the eye fixed on the window (marked " x " in illustration) one can see when fluid begins to flow (In some cases the cerebro-spinal fluid is at such pressure that it spurts through the window If this happens the shutter can be lowered) A sterile test-tube is then placed under one end of the cylinder handle, the fluid flows down the inside of the cylinder and directly into the test-tube None can run back along the outside of the needle and down the patient's back, as often happens when using the ordinary lumbar puncture needle Sometimes the fluid flows better by rotating the needle This can be done without interfering with the outflow, as the cylinder handle is open at both ends



Platinum iridium lumbar puncture needle. B Side view of needle with handle annexed showing little window or opening and shutter marked " x " C, Top view of handle giving full view of window and shutter " x." D View of needle and handle placed horizontally so as to show hollow cylinder handle

If it is desired to administer intrathecal injection after the withdrawal of the cerebro-spinal fluid a syringe or rubber tubing can be attached to the needle through the window ("x") in handle

Having withdrawn the required amount of cerebro-spinal fluid the needle is removed, a collodion dressing applied, and the patient immediately put lying down on his stomach on the operating table or on a sofa for about 15 minutes He is then allowed to walk back to his ward, being instructed to go straight to bed and remain lying on his stomach for a few hours

I have used the above needle for some time and find that lumbar punctures performed as above are practically painless and are rarely followed by any headache or bad after effects The needle handle shown was made under my direction by Sergeant G T Platford, R A M C , from an empty cartridge case The complete instrument is now made by the Holborn Surgical Instrument Company, and the price is 25s

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RAPID ABORTIVE ACTION IN THE INITIAL STAGES, &c

CURATIVE ACTION IN THE ADVANCED AND CHRONIC CONDITIONS

Sir,—I [illegible] H M S —— July 27 1917 [illegible] The drug has [illegible] (Surgeon R.N.)

Medical Treatment of CANCER.

CUPRASE

Cuprase is a colloidal Copper hydroxide which is obtained chemically by the reduction of Salts of Copper in the presence of Albumosic Acid

This treatment has passed far beyond the experimental stage The numerous clinical reports from Doctors of repute in various countries give cases of a great variety In all of these pain has been eliminated, and in a good percentage cures are claimed, and in no instance any undesirable effects

Extract from Proceedings of the Royal Society of Medicine February 1913

Dr George Herschell comparing electric and chemical colloid copper stated "Chemical colloid appears to give the best results In the following cases chemically prepared colloid was used. Experimentally it has been proved: (1) That particles of colloid copper can be demonstrated in the granulations of cancerous growths after two or three injections of the colloid and clinically (2) There is invariably great relief from pain (3) Appetite and strength return and the patient puts on flesh; (4) There is in many cases a diminution in the size of the tumour (5) The injections are absolutely non-toxic, although in many cases an inflammatory reaction is manifested in the cancerous growths.

As regards my own personal experience in the use of this method of treatment in addition to my own cases I have had an opportunity of observing the effects in the practice of some of my medical friends and in nearly all cases the progress of the disease appeared to be arrested."

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THE LANCET.

LONDON SATURDAY AUGUST 18 1917

Education, War, and Progress

WAR is the great opponent of the progress of civilisation and a prime deterrent of educational schemes This truism was found on all lips as soon as it became apparent that the war must last for a long time, being employed as an argument alternatively for the immediate suspension of everything except fighting, and for the immediate suspension of fighting But the truism has been examined more closely as the recent months and even years were rolling by, when it became possible to note that in certain directions sociological advances were being originated by, or growing up with, the conduct of the war And the spirit with which the country, as well as the legislature, has received the proposals of the Education Bill, which was introduced last week in the House of Commons, is a proof that we are all resolved that the end of the war shall not find us as a nation to have lapsed far from our former grace—nay, we may hope to see, on the day when peace dawns, signs that we are more ready to seek for better things Mr FISHER justified the introduction of a measure of far reaching social importance in the height of a great European war because, among other things, the provisions of the new Education Bill are connected with the circumstances of the war, and when he warned the House of Commons, in an advance defence of his more revolutionary proposals, that we had reached a point in history where we must take long views, he was saying in so many words that the war has enabled us to see much in proper perspective that had been a muddle to the self satisfied vision of peaceful security He reminded us that we have incurred the hostility of a nation larger in population than our own, and with a larger extent of concentrated territory, and that no one need count upon German sentiments changing after the war, it followed that it was necessary for the youth of our country to be given the best educational opportunities which ingenuity can devise, so that the coming generation may hold its own in the gigantic international combat of brains and endeavour

The new Bill is founded upon Mr BALFOUR'S Act of 1902 It is a development of that thoroughly sound, though much discussed, piece of legislation, and we trust that it will be carried into law much in the shape of its original provisions For it is a charter of salvation for our youth of both sexes There can be no doubt whatever that the best educated countries will be the ones that will most quickly recover from the effects of the war, while the benefits of education can only be adequately obtained by those in a sound physical state Every educational scheme which tends to impair that state by so much fails in its educative purpose, and every scheme which does not aim to improve that state is a want of that long vision which Mr FISHER demands The main proposals of the New Education Bill may be summarised as follows They aim to improve generally administrative organisation by the consolidation of school grants, and by any other measure of reform suggested by an effective survey of the educational machinery of the country, to secure that every boy and girl of elementary school life up to the age of 14 shall be sheltered from industrial work, to establish part-time day schools at which attendance shall be compulsory, and to develop higher elementary education while making the improved physical conditions of the children a first care In many places this programme is of distinctly medical interest apart from the general interest which medicine must always take in the work of social reform. We endorse cordially, for example, the intention to enforce the prohibition of the employment of children under the age of 12 and to secure that those under the age of 14 shall pursue their studies uninterrupted by the competing claims of industry There is no doubt that all earning of wages under 14 is open to grievous abuses It may be quite true that in certain districts of the country where part time employment is recognised the physical standard of the children does not seem to be unduly low, but, if it be true, it can only prove that the system as at present worked is in the hands of considerate and intelligent employers The organisation under which continuation schools are to be set up by the Bill reveals a very proper and adequate appreciation of the circumstances in which alone such schools can be of any service It is proposed that, with certain exceptions to be defined under the Bill, any person no longer under obligation to attend a public elementary school shall attend such continuation school as the local educational authority of the area in which he or she resides may require for a period of 320 hours in the year—that is, eight hours a week for 40 weeks And we rejoice to see that the Bill provides that the part time which is to be given up to continuation study will be taken out of the employers time, precaution being also observed that the students have not to work unduly long hours during the days on which the classes are held, and are given a reasonable interval for food, rest, and washing between leaving the workshop and attending the continuation school

Mr FISHER is to be warmly congratulated on his Bill, and we hope that it will not be long before the measure, without drastic modifications, finds a place on the Statute book The general health of our State school population is not good, though strenuous exertions on the part of school medical officers have maintained it without deterioration during the war We are sure that the splendid efforts made by the school medical service will take more speedy effect under a reformed legislation Physical training is already recognised in our elementary State school education, but few educational medical officers can feel that they have at their disposal any systematic scheme for the physical betterment of their charges The new Bill gives physical training a place in the activities of the continuation schools, while it empowers local education authorities to establish nursery schools and to maintain playing fields and swimming baths Medical inspection will take on a new meaning when such opportunities for physical well being are brought within the reach of the young of both sexes The Bill is a piece of enlightened hygiene Money will have to be spent with both hands to ensure its promises being realised, and the truest economy will be served in the spending

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The Administrative Control of Tuberculosis

WE have the tuberculous, as we have the poor, always with us, and their origin has much in common Administrators have long been accustomed to look on the incidence of tuberculosis and the statistics of infant mortality as indices of the success of social medicine in a community For many years we have noted with some complacency a steady reduction in the death rate of both, although in diminishing ratio, to which pleasant feeling of security the figures for 1915 put an end with something of a rude shock In that year 41,676 deaths were returned under headings 28 and 29 of the international list of causes of death, which include "phthisis" and pulmonary tuberculosis, amounting to 7 4 per cent of the death rate from all causes In almost every age group among females as well as among males the mortality was markedly higher for 1915 than for the average of the five previous years The figures for tuberculous meningitis showed the same increased incidence These and other similar facts give occasion for a renewed inspection of the means applied in this country to control tuberculosis, and it is instructive to note that at the end of the first quarter of the current year only 269 sanatorium beds and 69 hospital beds were occupied by insured persons suffering from tuberculosis under the care of the Insurance Committee of the County of London, while during many months of the year 1916 the number on the waiting list exceeded the number of those under institutional treatment The London Insurance Committee was unanimous in finding the provision for tuberculosis in the county, and especially the financial provision, to be inadequate, and in bringing the situation very forcibly to the notice of the Commissioners Going further afield, a dramatic picture of the incidence of tuberculosis in France has been recently drawn by Dr HERMANN M BIGGS, the State Commissioner of Health for New York, who was sent, at the suggestion of the French Government, by the Rockefeller Foundation to consider the problem of tuberculosis in the French armies Dr BIGGS found that there had been a great increase in the prevalence of tuberculosis in all the armies of the belligerent countries, excepting only England He estimated that if the war were to end now there would be approaching half a million cases of tuberculosis to be cared for, with practically no facilities in France to deal with them At the end of this year France may have some 15,000 beds at the disposal of tuberculous patients, in addition to half a dozen well organised dispensaries, and a handful of physicians conversant with the tuberculosis problem, but with no trained nurses or special social workers The figure takes note of the new hospital annexes, to which our Paris Correspondent calls attention this week This is an improvement on affairs at the beginning of the war when there were only some 1000 sanatorium beds in the whole of France, and these in private institutions Hospitals then received tuberculous cases into their general wards and cared for them there, if at all Before the war France had, in fact, a tuberculosis death rate three times as high as England and more than twice as high as that of New York City

Dr BIGGS, as well as the French authorities on whom he bases many of his statements, finds that this lamentable degree of tuberculisation was dependent on the virtual absence before the war of any effective administrative control on which the conditions obtaining on mobilisation had a specially baneful effect The extreme urgency made any thorough physical examination of the recruits impossible, with the result that many cases of latent and incipient tuberculosis were mobilised On this material the conditions of trench warfare, the cold and damp of the predominating underground life, relieved only by billeting in peasant houses with little air or sunshine, produced their inevitable effect, although by no means as speedily as might have been expected At the receiving hospital for the sanatoriums of Bligny, where for purposes of classification all tuberculous cases of whatever degree were sent in the first instance, Dr L GUINARD, the physician in charge, relates that out of the first 1500 patients 863 were found to have taken part in campaigning, of whom 395 had served between 6 and 12 months, 149 more than 12, 28 more than 18, 9 more than 20, and 8 more than 24 months High among the soldiers, the incidence of tuberculosis has apparently been larger among the 2¼ million people who remained in the invaded departments, of whom a large number have now been sent back by way of Switzerland Of the first 20,000 of these 25 per cent were estimated to be suffering from tuberculosis Among the civilian prisoners in Germany an estimate of 3 or 4 per cent has been made, while the proportion of tuberculosis among exchanged prisoners from Germany has been placed at 30 to 40 per cent

Few, if any, of these observers lay great stress on infection as a principal agent in the incidence of this war time tuberculosis Dr BIGGS frankly draws the simple lesson of the value of public health organisation and administration in control, ascribing the difference between England and France in respect of tuberculosis to the relative efficiency in the former of the public health service America, with its aptitude for learning lessons from the failures of others and with the nearer object lesson of the large incidence of tuberculosis in the Canadian Army, has just instituted a volunteer service of physicians with special experience of chest conditions, who will be commissioned for short periods of three months or so as lieutenants in a medical corps to re examine every man now in service in the reserve officers' camps and the national guard as fast as they are called up into federal service In this way it is expected to prevent the risks attendant on the arduous conditions of army service to those with any demonstrable tuberculous lesion Any persons who still contend that under the present conditions of civilised life infection is the main factor in the spread of tuberculosis should study with care and an open mind the story of tuberculosis in the French Army and Dr BIGGS's report upon it It is, of course, obvious that the complete segregation of the tubercle bacillus would remove tuberculous disease, and probably in the minds of those who uphold the infectious origin the syllogism rules The consumptive contains tubercle bacilli, tubercle bacilli should be segregated, therefore the consumptive should be segregated This view was presented by the London Insurance Committee in their recent report on the treatment of tuberculosis, a view which prevailed against the unanimous dissent of the medical members of the Committee The report laid strong emphasis on the infectious character of tuberculosis and on the contact with the tuberculous person as the main cause of the disease, comparing, indeed, tuberculosis with the common infectious fevers, and suggesting that the problem of segregation could be solved by adopting methods applicable to these transient affections Dr H HYSLOP THOMSON's article, which we publish in another column, makes a comprehensive survey of the methods of administrative control which, as experience has shown, are by no means covered by the avoidance of infection How could it be otherwise when at least seven eighths of our urban community and one quarter of our rural community have been demonstrably brought in contact with the tubercle bacillus, whereas less than 10 per cent ever suffer from tuberculous disease?

HOUSING IN SCOTLAND—The Local Government Board for Scotland has issued to the local authorities under its control a series of questions as to housing accommodation for the working classes similar to the series inquiring into such conditions in England upon which we commented last week The inquiry covers practically the same ground in both cases, but the Scottish local authorities are specifically asked for information in tabular form as to the number of existing houses containing four apartments and under excluding sculleries how many of these were in 1911 (the date of the last Census) and how many are in the present year occupied vacant overcrowded or sublet, defective or uninhabitable—whether occupied or not It is asked further that if the information can be subdivided conveniently particulars shall be given separately as to houses containing one two three and four apartments The question is a pertinent one when it is borne in mind that in a house of less than four rooms there cannot be in addition to a kitchen or living room accommodation for sons and daughters separate from one another and from their parents

Annotations.

"Ne quid nimis"

THE MEDICAL MAN IN PARLIAMENT

MAIDEN speeches were made in Parliament this week by two notable recruits to the small number of medical men representing constituencies in the House of Commons—namely, Sir W Watson Cheyne, the Member for Edinburgh and St Andrews Universities, and Sir A Garrod Thomas, the Member for South Monmouthshire In each case the speaker's words owed authority to his medical position and scientific training, but in each case the well being of the community at large, and of that vast section of the public which is fighting our battles in the trenches, inspired the arguments The speeches were not by doctors for doctors, which is to say that Sir Watson Cheyne and Sir Garrod Thomas are seen fully to understand the right rôle of the professional man in a general assembly of deliberation Parliament exists for the good government of the people, and men of special equipment find their place there not as advocates of their class but as exponents of the views of that class where questions of public importance are at issue Sir Watson Cheyne put admirably, and indeed unanswerably, the arguments against the official recognition for purposes of the Navy and Army of unqualified medical ministrations Officers and men can consult any irregular practitioners if they choose, but it is impossible for the Admiralty or the War Office to take the responsibility of handing over the medical care of their employees to persons whose scientific equipment has received no standardised tests Sir Garrod Thomas addressed himself to a question which, like that of the unqualified practitioner, is not new in the House of Commons, but about which more will certainly be said He called attention, in quite restrained terms but with facts behind him, to the anomalous distribution of medical men between the fighting forces on the one hand and the civilian population on the other, alleging that the Army in France has many medical officers whose time is but scantily employed, while showing that in certain civilian centres no possible display of energy by the few men left to do the work enables them to keep level with their duties Mr Macpherson, replying for the War Office to the arguments of both speakers, stated that the Department would not take the risk of employing unqualified persons He also announced that a Committee would be appointed to inquire whether any misuse had occurred in the employment of medical men in France We are glad to know that this Committee will be appointed immediately The medical profession is anxious to learn what are the rights and wrongs of a very important matter To say that the temporary unemployment of medical officers in their ambulance capacity merely implies low casualty lists at certain times is a perfectly satisfactory answer in many of the cases of apparent waste of medical material which have been brought forward, but other instances of misuse have been alleged which do not fall under this category, and which should certainly be the subject of investigation Sir Watson Cheyne and Sir Garrod Thomas have made their mark as Parliamentary debaters with far less delay than is usual among new Members and the medical profession welcomes their presence in the House of Commons

THE LONDON SCHOOL MEDICAL SERVICE AND THE WAR

THE increasing importance which is being attached by all public authorities to the conservation of the health of the nation's children is illustrated by the action just taken by the London County Council in restoring the personnel of the School Medical Service to its pre war footing As a war emergency measure the London County Council in November, 1915, decided to reduce its school medical staff by the equivalent of four and a half school doctors and four school nurses This reduction was carried into effect largely by modifying the procedure in relation to the examination of the entrant infant children It was decided that in place of the detailed examination of all entrants there should be substituted a preliminary cursory inspection of entrants followed by a detailed examination only of those picked out by the school doctor as obviously ailing The effect of this alteration is set out in the annual report for the year 1916 of the school medical officer which has recently been issued In this report reference is made to the apprehension naturally entertained that this modification of the procedure would result in failure to discover defects of an important nature in many of the children That this fear was based upon solid grounds is shown by the fact that under the new method there was in 1916 a leakage to the extent of 12 per cent in the children found to have defects necessitating advice Dr W H Hamer concluded that it would be necessary to revert to the former practice of examining each entrant infant in detail as soon as the conditions of National Service make it possible so to do Some years ago, it will be remembered, there was an acute public controversy on this very question in the course of which Sir Victor Horsley vigorously took up the cudgels in favour of a complete detailed inspection of entrant children in place of what he then described as "the march past" The results given in Dr Hamer's recent report constitute a testimony to the correctness of Sir Victor Horsley's views It is to the credit of the London County Council that so soon as the results of their new departure were communicated to them by their school medical officer, and without waiting for any mitigation of the present stress upon the medical profession, they decided at once to restore the school medical staff to the original strength, on the ground that the welfare and care of the children must take precedence, even at the present time, of all other matters

OUTBREAKS OF ŒDEMA IN GERMANY

WAR conditions have given occasion in Germany for the study of an "œdema disease" practically unknown in peace practice The most considerable study has been made by Dr A V Knack and Dr J Neumann at the General Hospital of Hamburg Barmbeck[1] These observers deal with a series of cases among the civil population in whom the œdema was generally located in the feet and legs, occasionally in the thighs and trunk In more than one half some degree of facial swelling was present, in one sixth of the cases the hands were swollen, and in one ninth ascites was present Men were more affected than women, young children not at all, the youngest certain case being 12 years old In all severe cases a diminution was found in the refractive index of the serum, implying a hydræmic condition of the blood Recovery always followed rest in bed on ordinary hospital diet, and restriction of fluids was rarely necessary Convalescence was, however, slow To determine the cause of the œdema the authors sought to secure its return in convalescents by restricting the diet principally to turnips, and by giving large quantities of water internally Neither measure separately ever produced the result, but with restriction of diet plus water drinking, the œdema rapidly returned in convalescent patients Chemical examination of blood and urine showed a diminution in lipoids and in the organic phosphorus content of the body Dr F Lange[2] discusses the causation of a group of similar cases observed by him among the industrial workers in a West Prussian centre, concluding that a diminished permeability of the blood vessels was present, due to a qualitative alteration in the food, perhaps to the extreme deficiency of calcium. A study by Dr W Hülse, from the pathological institute of Breslau, on the origin of the œdema disease in prison camps,[3] led to much the same conclusions, except that it was more frequently found as a sequel to relapsing fever, a frequent plague of such camp life, and in men who had previously been long exposed to extreme cold The condition may be taken as one of the signs of imperfect nutrition due to restricted diet

THE SOLDIER AND THE CIGARETTE

THE question whether cigarette smoking does material harm to health has come into greater prominence now that the habit is almost universal amongst our troops There can be little doubt that the soldier looks upon the cigarette as part of his kit, as affording him a source of genuine comfort in strenuous times and as increasing the pleasures of relaxation when his nerve racking duties are for the time in abeyance Everyone knows that tobacco smoking has been associated from very remote times with phases of relief from stress and intense activity, the aborigines of America smoked the pipe of peace as much for this cause as to lend gravity to a *pow wow* The practice of smoking provides unquestionably a mental anodyne, and that fact alone accounts for its universality in the present bitter days It must be remembered, however, that tobacco smoking is a species of drug habit, although perhaps a mild one if we leave out the question of excess, and that the continual drawing of tobacco smoke into the mouth or, worse, deeper into the respiratory tract, introduces toxic risks Hygienically, of course, air that contains poisonous products of combustion would be condemned as departing from a standard of purity demanded by healthy respiration Moderate smokers, however, as a rule show no depreciation of normal health It has been suggested that there may be a relationship between cigarette smoking and the "soldier's heart" In a careful inquiry into this subject, undertaken at the instance of the Medical Research Committee by Dr John Parkinson and Dr Hilmar Koefod, the results of which we publish this week, it is concluded that while excessive cigarette smoking is not the essential cause in most cases of "soldier's heart" it is an important contributory factor in the breathlessness and præcordial pain of many of them The immediate effect of cigarette smoking upon the circulatory system and upon the breathlessness of exertion was observed in 30 smokers, of whom 20 were cases of "soldier's heart" and 10 were healthy soldiers Each subject smoked either four or five cigarettes during a period of 40 minutes A demonstrable effect was recorded in 17 of the 20 patients, but it is interesting to note that the 3 unaffected were non inhalers Nine of the 10 controls, all inhalers, were influenced in the same fashion, though not to the same degree Generally the observations show that in health the smoking of a single cigarette by a habitual smoker usually raises the pulse rate and blood pressure perceptibly, and these effects are a little more pronounced in cases of "soldier's heart' Moreover, the smoking of a few cigarettes can render healthy men more breathless on exertion, as was shown to be the case in a large proportion of the patients under examination The results show clearly that the soldier should be warned against inhaling, and, of course, he should avoid excess

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[1] Deut med Woch, July 19th, 1917, p 901

[2] Ibid. July 12th, p 876

[3] Münch med Woch, July 10th, 1917, p 921

BISMUTH POISONING

THAT toxic and even fatal results may follow the use of bismuth is not generally appreciated, though the late Professor Kocher in 1903 condemned the use of bismuth subnitrate as a dusting powder for granulating wounds because he had observed ill effects Stomatitis, with ulceration and loosening of the teeth and pigmentation of the buccal mucosa, vomiting, diarrhœa with passage of blood and mucus, and nephritis are the principal manifestations In the *Cleveland Medical Journal* for June Professor John Phillips, of the Western Reserve University, has reported the following case A lad, aged 18 years, was admitted into hospital on Oct 7th, 1915 Three months before he was wounded with a pitchfork in the left knee The joint became red and swollen so that it had to be opened and drained A sinus was left which closed after some time Five weeks before he was seen he began to complain of soreness of the mouth, which grew rapidly worse, so that he could take only fluids He was much wasted The breath was offensive and foul mucus constantly dribbled from the mouth The posterior part of the tongue and hard palate, the uvula and the gums were covered with a dark grey necrotic mass which could be easily removed, leaving a bleeding surface The cervical glands were enlarged There was firm swelling of the left knee joint The urine contained a slight amount of albumin and hyaline and granular casts At first cancrum oris was diagnosed, as the slough obscured the pigmentation After about 10 days the slough separated, leaving a bleeding surface, and pigmentation of the mouth particularly of the gums, was observed Three days after admission he had three general convulsions A week later severe diarrhœa with much mucus and some blood in the stools, began It was then noticed that there was marked pigmentation of the rectal mucosa He became so anæmic that on Oct 23rd the red corpuscles numbered only 1,500,000 The correct diagnosis was not made until Nov 6th, when the X rays revealed in the knee joint a large quantity of bismuth (which it was then ascertained had been injected into the sinus) The joint was opened and as much of the bismuth as possible removed Transfusion of blood was performed but he died three days later The necropsy showed acute ulcerative colitis acute parenchymatous nephritis and diffuse brown pigmentation of the viscera, especially of the colon From the use of bismuth subnitrate another kind of poisoning—nitrite poisoning—may result Professor Phillips reports two cases A child, aged 4 years, was seen in consultation On the previous day she had been given for colitis a drachm of bismuth subnitrate in a starch enema. Twelve hours later she became nauseated, very cyanosed with a small weak pulse, and partially comatose This condition continued throughout the day The blood was very dark The colon was irrigated repeatedly Within 24 hours she was much better, the cyanosis being less marked, and by the third day all the symptoms had disappeared In the second case a man, aged 50 years, was seen in consultation for stupor and cyanosis On the previous day he was given an ounce of bismuth subnitrate in milk for X ray examination of his stomach During the night he was nauseated and had a severe chill Towards morning he became cyanosed and unconscious When seen he was deeply cyanosed, the mucous membranes being plum coloured. The pulse was 140 and very weak. The colon was irrigated several times and much bismuth washed out Under stimulation and transfusion of blood he recovered These cases show that bismuth subnitrate should be given with care and not be used for the purpose of X ray examination

THE NEGLECT OF NATURAL SCIENCE

LAST year the Government decided to appoint a committee on the subject of scientific education in secondary schools and it was ultimately formed with Sir J J Thomson as chairman The committee were asked to inquire into the position occupied by natural science in the educational system of Great Britain, especially in secondary schools and universities, and to advise what measures are needed to promote the study of natural science, regard being given to the requirements of a liberal education, to the advancement of pure science, and to the interests of the trades, industries, and professions which particularly depend on applied science Amongst the important representations which have been brought before them are those from the "Committee on the Neglect of Science," presided over by Sir Ray Lankester In the opinion of this committee it is a matter of urgency, in order to promote national efficiency in the near future, that the natural sciences should be made an integral part of the educational course in all great schools of this country, and should form part of the entrance examination of the Universities of Oxford and Cambridge as well as of the newer universities It was also held that it is in the highest degree desirable that the Government should exercise the large power which it possesses of encouraging the study of the natural sciences and thereby increasing the efficiency of our public servants (1) by assigning capital importance to the natural sciences in the competitive examinations for the home and Indian Civil Service, (2) by requiring some knowledge of the natural sciences from all candidates for admission to Sandhurst The method indicated is held to be the only one by which it is practicable to bring about the desired change in the attitude of the schools throughout the country towards the natural sciences and to make general some knowledge and understanding of these sciences Clearly, as the results of such changes will only develop in the course of years, it is desirable, if they are determined upon action, that the matter should be at once taken in hand by the Government The Government Committee were also strongly urged to remove "the stumbling block of compulsory Greek at the Universities of Oxford and Cambridge," and it was pointed out that though a majority of the people who have given attention to the matter are now in favour of reform, the way is blocked by the non resident voters, and this way should, in the opinion of the committee, be cleared by Government interference It is suggested that more direct encouragement of science is needed, so that there should be an increased number of careers open for highly trained men, while existing scientific services should be expanded, so that men who had received high scientific training could find careers It is not proposed that the subjects of languages and history should be displaced, but there can be little doubt that there must soon be secured for the teaching of natural science a position of no less importance, as an essential component of a liberal education, than that which is now held by the teaching of languages and history, and the views of the Government committee on this question may well lead to important modifications in the curriculum at our centres of education

DEATH CERTIFICATION

THE serious and increasing shortage of medical men available for civilian practice is making itself felt in various ways The *Guy's Hospital Gazette* for July states that those responsible for dealing with acute cases sent up to the hospital are finding that the work of the general practitioner is gradually becoming less efficient Acute abdominal cases, it is here stated, are constantly being admitted in which perforation had evidently been present for some days In view of the urgent call on the practitioner's time in matters of life and death it is not unnatural that less time and thought are available for work of a more formal character At a recent inquest at Hackney held by Dr Wynn Westcott on the body of a labourer the unusual form of a death certificate excited comment The deceased was seen by a medical man on July 25th at his surgery, and by no other practitioner before his death, which took place on August 4th Meanwhile the medical man had gone away, and before doing so had signed a certificate which a colleague, who was temporarily attending his patients, filled up and handed to the relatives This, as the latter gentleman stated in his evidence, he did after making inquiries, but he admitted that he had not seen the patient when alive, nor apparently had he seen the body The jury accepted the certificate as accurate and returned a verdict of "Death from natural causes," adding that, in their opinion, the proceeding was irregular, the coroner having already made observations to the same effect While the giving of a death certificate in such a manner is irregular and obviously undesirable, we cannot find evidence that it is illegal It cannot be said to be in accordance with the spirit of the statute of 1874, which regulates the registration of deaths, but done as in the case under comment without any wrong intention it does not constitute an offence The Act (37 & 38 Vict c. 88) only orders that a medical practitioner attending a patient in his last illness shall sign and give to someone who has to give information to the registrar a certificate stating to the best of his knowledge and belief the cause of death Bef the Departmental Committee which inquired the law relating to coroners Mr J Brooke Litt in the course of his evidence, was asked whethe medical man was obliged to see the body after dea when he replied as follows —

> I think the Registration Acts do not point out in any how the medical man is to prepare himself for giving certificate, except that it appears to be assumed that certificate will be given by the medical practitioner attended the deceased during his last illness Section 2 the Act of 1874 makes it incumbent upon such a practitio to give a certificate of the cause of death in the prescrib form There is, however, no statutory direction that shall see the person after death before he gives certificate

The first part of this reply calls attention to t unsatisfactory looseness of the law as to who is be responsible for the giving of a certificate of t cause of death, although the question asked w directed to another point—that is to say, to t desirability of the medical man inspecting the bod as to which the certificate is given

SYNTHETIC ALCOHOL FOR COMMERCIAL PURPOSES

THE synthesis of alcohol from its component elements would afford great relief to a country like Switzerland, dependent for its usual supply of alcohol on outside sources and naturally loth to employ for the purpose any of its scanty stock of starch Dr Fleissig, apothecary to the Town Hospital in Basle, tells[1] how this problem has been solved, although, unfortunately, its complete technical application will require 18 months to work out. Calcium carbide is now produced in Switzerland to an annual amount of 70,000 tons, and is the starting point of the synthesis The acetylene evolved from it combines with a molecule of water to form acetaldehyde in the presence of a catalyst such as mercuric sulphate Two additional atoms of hydrogen, produced electrolytically unite with the aldehyde to form alcohol under the influence of certain metals as nickel, platinum, or palladium A ton of alcohol can thus be obtained from 2 tons of carbide and 500 cubic metres of hydrogen, requiring, apart from electrical energy, only 2⅓ tons of coal and 4 tons of chalk Switzerland's average requirement of 10,000 tons of alcohol would therefore demand the import of only some three quarter million francs worth of coal, while the ready made alcohol at present costs 4,000,000 francs The process requires, of course, a large amount of electrical energy—a ton of alcohol demands 11,000 kilowatts to produce—but this is readily supplied by the "white coal" available in the water power of Europe's central plateau We know well enough that alcohol may be synthetically produced from acetylene, but up to the present this has only been done on a laboratory scale In this case the method has been to convert the acetylene into ethylene by contact with hydrogen, and to pass the ethylene so produced into sulphuric acid, sulpho vinic acid resulting Finally, this acid when distilled with water gives alcohol The synthesis on a commercial scale will be watched with close interest by all those who use industrial alcohol

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[1] Correspondenzbl. f Schw Aerzte 1917 p. 948

DONATIONS AND BEQUESTS —The late Mr S H. Whiting, of Charlton King's, Cheltenham, bequeathed £500 each to the Gloucester Royal Infirmary, Cheltenham General Hospital, and the Stroud Hospital, and £200 to the Cirencester Cottage Hospital

THE PROBLEM OF TUBERCULOSIS

By H Hyslop Thomson, M D Glasg , D.P.H Liverp ,
MEDICAL OFFICER OF HEALTH FOR THE COUNTY OF HERTFORDSHIRE

So much has been written about the problem of tuberculosis that any further contribution which contains nothing new with regard to the measures to be adopted for its eradication may well be considered by many as superfluous The present however, appears to be an opportune moment to review what has been done in the past and to endeavour to forecast to what extent present efforts require to be supplemented by further practical measures in order that this disease may be adequately and comprehensively dealt with. There exists no royal road to the solution of the problem of tuberculosis, and the present efforts which are being made throughout the country to stem its ravages have suffered to some extent from the fact that they are based on restricted, if expert views rather than on a broad comprehensive outlook The question is not infrequently asked why so much energy and thought are directed towards the solution of the tuberculosis problem to the apparent exclusion of other diseases, the answer is that in tuberculosis we have a fairly accurate index of the health standard of a community and that in the absence of any specific cure we are compelled to promote conditions which are inimical to the presence and spread of the disease, with the results that the health standard of the community is raised and resistance to attacks by other forms of disease is increased

Nomenclature

Various terms are frequently applied in relation to tuberculosis the use of which should be discouraged. The term phthisis is gradually being discarded although it is still too frequently used Pulmonary tuberculosis and lung tuberculosis are the only terms which can correctly be used to designate the pulmonary type of this disease. The popular terms consumption and consumptive, owing to the loose and inaccurate manner in which they are frequently used are responsible for much of the misconception regarding pulmonary tuberculosis which at present exists in the public mind While the term consumption is regarded as connoting a disease of high infectivity the term pulmonary tuberculosis suggests a morbid condition of much less severity Originally the term consumption was used to designate open cases of lung tuberculosis with classical signs and symptoms, but popularly it has come to be regarded as applicable to all forms of that disease The confusion caused in a patient's mind when he is informed that he is consumptive but has not consumption may well be imagined , the former term being sometimes loosely used to designate the so-called pretuberculous stage It must be admitted however that is extremely difficult to avoid the occasional use of these terms in general practice although the desirability of educating the public in the correct use of medical terms is obvious The medical practitioner is frequently asked the question if an individual has consumption and if the condition is one of early quiescent or closed pulmonary tuberculosis The wisest course to pursue is to answer in the negative and to state that the condition is one of lung tuberculosis which if progressive might eventually reach the stage popularly known as consumption The term pretuberculous has been not infrequently used to indicate a condition of health preceding actual tuberculous infection As a matter of scientific fact the majority of so-called pretuberculous cases are cases of early or latent disease and the term can only be correctly applied to that stage of lowered resistance which precedes actual infection with tubercle bacilli but as clinically we have no means of recognising or gauging this stage in relation to tuberculosis the term should be discarded as it is liable to mislead

Notification

The present methods of notification require to be [illegible] More detailed information is necessary so as to simplify and systematise measures adopted to prevent the spread of the disease The notification form should supply the medical officer of health with definite information on the type and stage of the disease the absence or presence of tubercle bacilli in the sputum and as to the [illegible] form of [illegible] a copy of such a notification form should immediately be sent to the medical officer of the authority responsible for the institutional treatment of tuberculosis Detailed information of this kind supplied at the outset by the general practitioner would facilitate the early and appropriate treatment of the disease and would enable health authorities to map out with ease the districts, streets, and houses in which cases of open tuberculosis most frequently occurred. For such information an increased notification fee would have to be paid, and the grading of such fee according to whether the sputum was examined or not would be desirable , but the value of such pioneer knowledge regarding each individual case is too apparent to require any extended argument Copies of Notification Form C, giving information of patients discharged from hospitals and sanatoria, should also be sent to the authority responsible for the scheme of treatment in county districts

Administration

If the present and future schemes for dealing with tuberculosis are to yield sustained and adequate results two essential conditions with regard to administration must be fulfilled. The first is the unification of all effort under one responsible authority, and the second is the provision of adequate facilities for prevention and treatment Under present administrative arrangements the efficient and expeditious treatment of tuberculosis is impossible Two authorities are locally responsible for administration in connexion with this disease, and one of these has quite insufficient funds to meet the demands for treatment This dual responsibility leads to duplication of effort and waste of time in unnecessary clerical work. The treatment of disease is never advantaged by elaborate reports and the expenditure of time and thought on clerical work, hence the desirability of adopting a simple uniform method of recording cases and of supplying information on application forms for institutional treatment The sending of patients to various institutions in different parts of the county leads to administrative difficulties but these cannot be overcome until each authority, or combination of authorities, provides its own facilities for treatment While existing schemes for dealing with tuberculosis take a fairly comprehensive view of the clinical requirements of the patient they do not include efficient and far reaching measures for conserving the results of treatment and for preventing the development and spread of the disease The care and after care of tuberculous patients have been left almost entirely to voluntary effort whereas they should be included as an important supplementary part of official schemes The questions of housing and occupation in relation to the prevention of the disease and the influence they exercise on the health and economic value of the individual with arrested tuberculosis must also be seriously faced

Preventive Measures

The causes of tuberculosis are too well known to require description Various conditions tend to impair the resistance of the human body to tuberculosis, and these are intimately associated, and for the most part interdependent Unhealthy home conditions more than any other factor pave the way for tuberculosis and they arise from three causes—viz insanitary surroundings, insanitary houses, and the insanitary habits of occupants When all three occur the incidence of tuberculosis is high and the health index is low The abolition of insanitary areas and the provision of adequate and efficient housing accommodation must constitute a part of the campaign against tuberculosis and a serious effort to solve the housing problem when the war is over may be anticipated Time and effort would be saved by the standardising of certain types of houses for rural districts Existing houses when they become empty should reach a certain hygienic standard before they are reoccupied The combined kitchen and sitting room with a large window surface with efficient cross ventilation and facilities for washing and cleanliness are essential features of a healthy working class house The insanitary conditions arising from neglect and ignorance are not so easily combated , in any effort to improve such conditions the services of the medical practitioner might be more extensively utilised During his professional visits the private medical attendant is in a position to note the evidence of dirt and neglect the closed window the diminished cubic space due to overfurnishing overcrowding the multitudinous array of knick knacks which harbour dust, and the food exposed to contamination by dust and flies By tact and timely suggestion he would be able to secure some improvement , but should conditions remain so unsatisfactory as obviously to impair or endanger health he should be in a position to fall back on energetic action by the health authorities While the modern trend of social improvement is towards the State becoming responsible for much to the individual, the latter must realise that he will be called upon to be responsible for much to the State Certain channels of infection require to be dealt with by legislative measures if the spread of tuberculosis is finally to be checked and controlled Legislation to provide a milk supply free from contamination by tubercle bacilli and other organisms is long overdue, while the provision of central public abbatoirs is an obvious public health measure, in view of the dangers arising from tuberculous meat The segregation of certain types of laryngeal and pulmonary tuberculosis is also an essential prophylactic measure

Institutional Treatment

The institutional treatment of tuberculosis includes dispensary treatment, sanatorium treatment, the hospital treatment of pulmonary tuberculosis, and the hospital treatment of non pulmonary tuberculosis The dispensary provides a centre for the diagnosis and treatment of early cases and for the observation of suspects and doubtful cases The importance of the dispensary as a unit for the observation and treatment of doubtful cases is obvious when it is realised that by this means a longer term of sanatorium treatment is secured for definite cases of the disease The insistence of the sanatorium physician for early cases is well known, but the whole scheme suffers if early cases are confounded with doubtful cases The work in connexion with the dispensary system is for the most part carried out by whole time officers, and this is, no doubt, the best method of carrying out this part of the scheme, although a closer coöperation between the dispensary officer and the general practitioner is desirable It has been suggested that the work in connexion with the dispensary should be uniformly carried out by a rota of general practitioners, with the tuberculosis officer acting in a consultative capacity This would no doubt have certain advantages and would be practicable under altered conditions, but it is difficult to conceive the clerical work inseparable from record taking recommending itself to the busy practitioner The hospital treatment of acute and advanced cases of pulmonary tuberculosis constitutes the most important part of the scheme both from the treatment and preventive standpoint Experience has shown that in the absence of such accommodation a gap exists between the dispensary and the sanatorium which makes efficient and expeditious dealing with tuberculous cases impossible Hospital treatment means skilled medical attention, efficient nursing and up to-date hospital administration, and while it makes provision for the segregation of advanced cases it also provides facilities for the treatment of acute cases of recent onset by induced pneumothorax, antiseptic and other measures, as a result of which a certain proportion are saved At the present time there exist no compulsory powers for the removal of advanced cases although such are desirable in certain types of the disease under certain conditions In the absence of such powers it is necessary to make the hospital inviting to the patient by instituting a reputation for efficiency of treatment and administration The Hertfordshire County Council has recently opened a hospital with the provision of 30 beds for acute and advanced cases, and the experience of the last few months in that institution has proved that the acme of the infectivity of pulmonary tuberculosis is reached during the last few weeks of life, and that the knowledge of being transferred to the sanatorium when a certain stage of improvement is reached provides a strong incentive to the patient to remain and persevere with treatment

The sanatorium treatment of tuberculosis has been carried out in this country for over 20 years, and while its benefits are undoubted, its limitations as the treatment is at present carried out, are definite That the present sanatorium methods do not yield the results expected must be admitted and the explanation is threefold Firstly, in the absence of adequate hospital accommodation unsuitable cases are sent to the sanatorium, secondly, the popular view that three months' treatment in a sanatorium will suffice to secure permanent arrest of the disease must be discarded, and, thirdly, the after care of patients, with the provision of suitable employment, &c, must constitute an official part of the scheme If sanatorium treatment is to yield the best results the question of the patient's capacity for work and of his future employment must be intimately linked with the treatment throughout its whole course The sanatorium should be reserved for early and non reactive cases, and simultaneously with improvement in health the patient should be instructed and employed in outdoor occupation, experience in which will subsequently prove of value to him To secure the best results, therefore, the sanatorium should be remodelled on the basis of an industrial institution, while the duration of residence should be considerably increased. In the industrial sanatorium the buildings would be of simple construction, and chief attention would be centred on the land and on facilities for useful employment. No tuberculous patient should be discharged from a sanatorium so long as there exists any possibility of further improvement and while there is no prospect of immediate return to suitable work. Work means wages and food, and good food with healthy home conditions is essential to maintain the condition of arrest and economic cure which is obtained by prolonged residence in a sanatorium The Hertfordshire County Council has purchased a site which is well suited for an industrial sanatorium of this kind, and it is anticipated that on the conclusion of the war the building will be proceeded with The value of tuberculin in the treatment of pulmonary tuberculosis has been much debated, but, as was pointed out some years ago by the writer, tuberculin gives the best results when employed in the sanatorium at the stage when the beneficial auto-inoculation induced by graduated manual labour is on the wane

The hospital treatment of non pulmonary tuberculosis is carried out either in special open air hospitals or in general hospitals At the present time the provision of such accommodation for insured persons is quite inadequate The treatment of non pulmonary tuberculosis on rational lines well repays the time and cost involved Experience has shown that such cases can be efficiently dealt with in general hospitals in small urban districts The good results obtained by exposing indolent tuberculous lesions to fresh air and sunshine are becoming more fully recognised

Domiciliary Treatment

The question of the domiciliary treatment of tuberculosis is one which calls for some consideration It must be admitted that domiciliary treatment has not proved as successful as was anticipated. No doubt, owing to the war it has not had a fair or extended trial, but under the present system it is doubtful if it will prove satisfactory even in normal circumstances If the domiciliary treatment of tuberculosis is to meet with any measure of success two things must occur at the outset—namely the existence of fairly healthy home conditions and the recognition of the necessity of rest under open air conditions when the temperature is raised In the absence of this essential rest when the temperature is above the normal the individual with pulmonary tuberculosis will sooner or later walk himself into his grave The present system of domiciliary treatment requires to be remodelled A uniform method of carrying out the treatment according to well-defined rules is desirable The method of record keeping in connexion with domiciliary treatment should be of the simplest character and should consist of a special card similar in some respects to that used in connexion with medical benefit The present method of payment for the services of the general practitioner in connexion with the treatment of tuberculosis is not quite satisfactory and might with advantage be altered Some uniform procedure with regard to the prescribing of drugs and appliances is also desirable. A special formulary for use in domiciliary treatment would be a distinct advantage It would also serve a useful purpose from a prophylactic standpoint if all chemists kept in stock a standardised sputum flask which could readily be obtained by prescription A closer coöperation between the tuberculosis officer and the family practitioner is desirable This demands tact and knowledge on the part of the former and willingness to coöperate on the part of the latter In not a few cases in my own experience the value of such close coöperation to the patient has been proved Under present conditions, however the time of the tuberculosis officer is too much occupied in dispensary work to permit of such coöperation, although the importance of a high standard of domiciliary treatment cannot be too strongly emphasised In domiciliary treatment prevention and treatment must act in unison, as it is in the homes of the people that there exists the greatest need for the carrying out of adequate prophylactic measures

Care Treatment

The care treatment of tuberculous patients constitutes an important and essential adjunct to medical treatment The Public Health (Prevention and Treatment of Diseases) Act, 1913, enables public health authorities with the sanction of the Local Government Board to carry out measures for the care and control of tuberculous patients The aim of such measures is to increase and conserve the good results obtained by medical treatment, and at present they are carried out through the agency of voluntary care committees The experience of the past few years has emphasised the desirability of coördinating such efforts in one comprehensive and official scheme, so that there may be sufficient financial help to secure effective sustained, and uniform action The extent to which the working capacity of the individual with arrested tuberculosis is made use of as a national asset depends in large measure on the assistance he obtains in securing suitable employment The economic question in relation to tuberculosis is of such far reaching importance that it cannot be overlooked in any comprehensive scheme for dealing with this disease. The outdoor relief granted by boards of guardians to chronic and advanced cases of tuberculosis has frequently proved of value, and it would in great measure solve the problem of care treatment if this department of the Poor law system so far as it relates to actual disease were reorganised and were transferred to public health authorities as an official system of care and help in connexion with tuberculosis and other diseases

Tuberculosis and the War

One of the many effects of the war has been to broaden our outlook in connexion with tuberculosis and other health problems The influence exercised by military service on the disease itself is now more accurately estimated. While the conditions inseparable from active service abroad is liable to diminish the resistance to tuberculous infection the life associated with military training in this country undoubtedly exercises a beneficial effect on the health of the soldiers The military authorities for some time have been exercising considerable care with regard to the admission of possible cases of tuberculosis to the Army Men with healed or localised latent pulmonary tuberculosis, however, are not unfit for certain forms of military or other national service, indeed, under favourable conditions they benefit by it. Given fresh air good food and regularised physical exercise, such cases undergo marked improvement in general health and physical vigour The contra indications however, are definite, and are as follows (*a*) the presence of tubercle bacilli in the sputum, (*b*) a temperature range above the normal (*c*) the presence of crepitations or other gross physical signs and (*d*) a history of tendency to hæmoptysis In the majority of cases discharged from the Army suffering from tuberculosis in the writer s experience the men have been on active service and the disease has been acute and progressive in type This fact accentuates the urgent need for adequate hospital accommodation, for not only is it a national duty to provide the type of treatment best suited to the requirements of each discharged soldier but it is highly desirable from the viewpoint of public health that cases in which the disease is acute or advanced should be transferred immediately to a suitable hospital for treatment

Conclusions

The death rate and attack rate from tuberculosis and the infant mortality constitute a fairly reliable combined index of the health standard of a community If these rates are low the death rate from almost all other diseases is also low important possible exceptions being malignant disease and organic heart disease The expenditure incurred in connexion with the treatment of tuberculosis will fail to secure an adequate return unless searching prophylactic measures are simultaneously carried out and unless such treatment is supplemented by an official scheme to conserve the beneficial economic results obtained The measures which are recognised as essential for the prevention of tuberculosis are also instrumental in raising the general standard of health and in protecting the individual from other forms of disease, this fact alone emphasises the importance of a broad and comprehensive outlook in dealing with the problem of tuberculosis

THE CONTROL OF VENEREAL DISEASES

The American Association for the Control of Syphilis

WE have received from Dr M F Engman of St Louis Mo, a statement of the objects of the American Association for the Control of Syphilis, which was organised at Cincinnati on May 23rd and 24th last These objects are the promulgation of knowledge of syphilis among medical men, medical institutions, boards of health, hospital boards, dispensary attendants and boards, and other organisations having the care and treatment of syphilis It is hoped to develop the investigation of the disease from the social and economic sides Plans are being made to collect standardised statistics from the various institutions now treating syphilis, to further the establishment of free clinics and dispensaries for the diagnosis and treatment of syphilis, and to encourage the more comprehensive teaching of syphilis in medical schools The association proposes to operate through a national body and local branches in various cities, acting in close coöperation with the American Social Hygiene Association The membership of the association at present is composed of the following —

Dr W T Belfield (Chicago) Dr Ernest D Chipman (San Francisco) Dr W T Corlett (Cleveland) Dr Isadore Dyer (New Orleans) Dr M F Engman (St Louis) Dr J A Fordyce (New York) Dr Marcus Haase (Memphis) Dr H H. Hazen (Washington) Dr M B Hartzell (Philadelphia) Dr H B Kleinschmidt (St Louis) Dr G M MacKee (New York) Dr E L McEwen (Chicago) Dr W H Mook (St Louis) Dr H Morrow (San Francisco) Dr H. J Nichols (San Francisco) Dr Oliver Ormsby (Chicago) Dr Sigmond Pollitzer (New York) Dr W A Pusey (Chicago) Dr A. Ravogli (Cincinnati) Maj Matthew Reasoner (Washington) Dr J F Schamberg (Philadelphia) Dr Morton Smith (Boston) Dr W F Snow (New York) Dr H W Stelwagon (Philadelphia) Dr G H Walker (Baltimore) Dr Grover Wende (Buffalo), Dr Udo Wile (Buffalo) Dr J M Winfield (Brooklyn) and Dr H R Varney (Detroit)

The following are the executive officers of the Association Dr M F Engman president, Dr J F Schamberg, vice president, Dr H E Kleinschmidt secretary and treasurer, 607, Federal Reserve Building, St Louis, Mo

Unqualified Prescribing and Advertisement

At the meeting of the London County Council last week the Public Health Committee reported as follows —

> An Order dated July 18th has been made by the Local Government Board under section 1 (2) of the Venereal Disease Act, 1917, applying to the areas of certain counties (including London) and county boroughs section 1 (1) of the Act prohibiting any person in such areas other than a qualified medical practitioner for reward either direct or indirect from treating any person for venereal disease or prescribing any remedy therefor or giving any advice in connexion with the treatment thereof whether the advice is given to the person to be treated or any other person The Act also prohibits the issue of advertisements relating to the treatment of venereal disease and, as from Nov 1st 1917 the issue of advertisements relating to the sale of preparations to be used as medicines or medicaments for the prevention cure and relief of any venereal disease The prohibition with regard to advertisements does not however apply to announcements by local or public authorities published with the sanction of the Local Government Board or to publications sent only to duly qualified medical practitioners or wholesale or retail chemists for the purposes of their business

Treatment of Venereal Disease at Portsmouth

A report on the work of the department established under the Venereal Disease Act, 1917, was submitted to the Committee of the Royal Portsmouth Hospital at their meeting on July 20th, by Captain A. Cambell R A.M C (T), medical officer in charge A detached building in the grounds of the hospital has been utilised for the purpose The staff consists of two medical officers, one sister, and two orderlies The department has been open for five months and during that time there were 152 males, 120 women, and 26 children, with a daily average attendance of 60 to 70 patients Civilians only were treated, women patients failed more than men to realise the necessity of attending regularly Few women living vicious lives sought treatment, but many young girls attended The attendance of cases of congenital syphilis was most satisfactory mothers being anxious to bring their children The results clearly showed that the clinic was doing excellent work

Facilities in Devon and Cornwall

The committee of the Royal Devon and Exeter Hospital has decided with the sanction of the Local Government Board to provide an out-patient department for venereal diseases and a certain number of beds for in patient treatment

At the last meeting of the Cornwall County Council it was decided to establish at once a clinic for venereal disease in the county at an estimated cost of £400

Public Measures of Control in Germany

The Reichstag has accepted the recommendations of its Committee on Population in regard to measures for combating venereal diseases These include (1) To make it a penal offence for a person who knows, or has good reason for knowing, that he has venereal disease to indulge in sexual intercourse, (2) to schedule venereal diseases in the Public Health Acts, (3) to set up treatment centres in each commune, (4) to engage the help of clubs and friendly societies, (5) to obtain accurate statistics of prevalence, (6) to make an examination in venereal diseases part of the final test for the medical diploma Other more radical measures were postponed for the present

The Remuneration of Medical Officers of Treatment Centres

The resolutions of the Council of the British Medical Association in regard to the remuneration of medical officers attached to venereal treatment centres were recorded in THE LANCET of Nov 11th last At the recent Representative Meeting, where these recommendations came up for discussion, it was decided to make no distinction in regard to remuneration between London and the *provinces* and *to* leave the fixing of the scale to the local option of the divisions The recommendation, as accepted by the Representative Meetings, runs as follows —

That the *following scale* of remuneration for part time senior medical officers of clinics be approved and recommended to divisions as a guide in their negotiations with local authorities:—

	Per session
For one or two sessions per week not exceeding 2½ hours each	£3 3 0
For three or more sessions per week, not exceeding 2½ hours each ..	2 12 6

The proper minimum salary for a whole time resident clinical assistant was also fixed at £250

PARIS

(FROM OUR OWN CORRESPONDENT)

Antityphoid Revaccination

THE Under Secretary of State for the Service de Santé has issued to the sanitary services an order to proceed with the antityphoid revaccination of all those who have not been revaccinated within two years Several cases of typhoid fever have appeared in the war zone as well as at the depôts even among those already vaccinated according to the regulations in force Bacteriologists estimate the duration of immunity resulting from the use of the various vaccines as not longer than two years The vaccines employed at the beginning of the war comprised three successive inoculations at intervals of six or eight days, but the men often received only one or two injections as a result of lack of time or the occurrence of acute indisposition following the first puncture The new order prescribes revaccination, employing a single injection of the same vaccine as was used in the first instance At present four brands of vaccine are in use in the French Army and Navy, most frequently that of M Vincent sterilised with ether, those of M Widal and M Chantemesse sterilised by heat—the most recent—and that of M le Moignic, where the culture is suspended in an oily medium a specially useful vaccine for troops, inasmuch as immunity is assured after a single injection

Transmission of Anthrax by the Sheepskins worn by Soldiers

Many soldiers during cold weather wear a sheepskin coat over their uniforms to protect against damp and chills At Marseilles Dr Roger recently noted among the troops several cases of malignant pustule undoubtedly due to a virus transmitted by the sheepskin The pustules appeared on the thorax, neck, and cheek In the last case the soldier was inoculated while sleeping with his head supported on his arm One death occurred Dr Roger recommends the systematic disinfection of this kind of clothing before it is handed out to the men

The Relation of Blood Pressure to the Age and Resistance of the Soldiers at the Front

M de la Prade has examined at the front a number of infantry, territorial, and artillery men, selected from those who have been between 20 to 30 months at the front and have thus suffered all the fatigues of war He classifies his 87 observations according to age-groups 20–30 years, 30–40 years, 40–43 years and, finally, over 43 years, with averages of strain for each group. He finds that at 40 years and over the blood pressure reaches the limit of the normal indicating the point at which circulatory equilibrium ceases to be sufficiently elastic to support a sudden considerable strain Above 43 years pressures become pathological. M de la Prade's conclusions are reassuring Trench warfare appears to have been borne well by the great majority of the troops at the front Men of 40 years should be considered to a certain extent From 43 years and on it is advisable not to place much reliance on the men Their physical resistance is no longer equal to the continuous fatigue of warfare, at any rate in the front line

Penetrating Wounds of the Abdomen

M Barnsby recently reported to the Society of Surgery the *result of the treatment* of 61 abdominal wounds observed during seven months at an advanced surgical post Of the 43 submitted to operation only 28 were found to have wounds penetrating the viscera and were retained at the post Among these 28 treated by immediate laparotomy there were 15 recoveries and 13 deaths The patient with an abdominal wound generally arrives in a state of shock, he is placed at once in a very warm room, where pulse and respiration are counted and arterial pressure determined At the same time morphine, camphor, and intravenous injections of camphor and adrenalin are administered The stay in this room is made as short as possible M Barnsby shows his preference for chloroform as an anæsthetic, finding that when ether is used chills often result, leading too often to pulmonary complications No hesitation, he says, should be felt in making an extensive opening at the outset Warm saline should be used to irrigate in order to avoid chill to the viscera and fall of blood pressure Perforations of the small intestine he holds, should be sutured in two planes after refreshing the edges of the wound Drainage should be for as short a time as possible, and the abdominal wall united in one plane with metal stitches The patient may be moved from the first or second day, but should be under observation and kept still from the fifth to the seventh day

Treatment of Discharged Soldiers in Hospital Annexes

At the beginning of 1916 the municipality of Paris, on the proposition of MM Dausset and Henri Rousselle, voted a sum 5¼ million francs for the isolation and treatment of discharged soldiers suffering from tuberculosis or affections of the respiratory passages In spite of the difficulties occasioned by lack of material and labour 700 beds are now available in ten temporary buildings erected as annexes to the following hospitals Laënnec Saint-Antoine, Cochin Lariboisière, Tenon Broussais, Salpêtrière La Rochefoucauld and Debrousse By the end of this year 1400 other beds will be available for patients at the institutions of Brévannes, Lagache Ivry, and Bicêtre

August 11th

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Gen D T Hoskyn is placed on the Retired List

Staff Surgeons to be Fleet-Surgeons: T B Shaw A. T Gillleton G S Davidge P T Nicholls

The following appointments have been notified:—Surgeon General P B Handyside to Chatham Hospital Fleet-Surgeons K. A Jones to *Victory* to *Pembroke* J Whelan to *Royal Arthur* and R L. Jones to Chatham Hospital, Temporary Surgeons K B A. Aikman to *Victory* and W Everett to D Southerland and J A. Hadfield to Plymouth Hospital.

ARMY MEDICAL SERVICE

Temp Col M MacLaren C M G Canadian A M C to be Deputy Director of Medical Services

Temp Lieut. Col C E Doherty Canadian A.M C to be Assistant Director of Medical Services

Temp Major J S Jenkins, D S O Canadian A.M C and Temp Capt H B Logie Canadian A.M C to be Deputy Assistant Directors of Medical Services

ROYAL ARMY MEDICAL CORPS

Hon Lieut-Col A S Woodwark to be temporary Lieutenant-Colonel

Temp Hon Lieut. Col Sir John Collie to be temporary Honorary Colonel

Sir Alexander MacCormick to be temporary Colonel

J F O Carroll to be temporary Honorary Lieutenant *Colonel*

Hon Major S W Woollett to be temporary Major

Lieut.-Col. W T F Davies D S.O late Imperial Light Horse, and Temp Capt H D Gillies to be temporary Majors

The undermentioned officers T F to be granted temporary rank:—As Lieutenant-Colonels: Lieut -Cols J Godding London Regiment J W H Brown Royal Engineers As Majors Majors H T Jenkins Royal Welsh Fusiliers S G Ogilvy Royal Scots J Gott Hampshire Regiment T W Mead Royal Engineers J A Wait, Royal Garrison Artillery W E M Corbett Devon Regiment W Murray Royal Field Artillery As Captains Capts C W Milner Notts and Derby Regiment F R Lucas Royal Scots As Lieutenant: Lieut R G Oram London Regiment.

Major W L Bennett is placed on Half pay List

Temp Capt R H Bremridge to be temporary Major

Temp Capt R. J McEwen Canadian A.M C to be acting Major while specially employed

Temp Capt. E M Lithgow Royal Highlanders to be temporary Captain

Temporary Lieutenants to be temporary Captains D N Knox E G D Milsom E G H Weir E Rommel, R Maclean E W H Cruickshank R. Massie W P Wippell, J J Anning D McC Aitken J F Sandilands

To be temporary Captains J J Boyd T R St Johnston W P H Munden C A Moseley G E Manning R F Gill J M. Renton R Milne, J S Joly O R M Kelly (temporary Captain from the General List) J W McIntosh (Canadian A M C) E Fidlar (Canadian A.M C)

R F Yencken and A E Lyster late temporary Captains to be Honorary Captains

R S Moon to be Lieutenant

To be temporary Lieutenants H L. Clift, J R Watson W J Stephens H. A. Des Brisay (Canadian A M.C) A T MacKenzie S Bree, S G Corner D A Dewar W J D Bromley T Winning A. Davies R Davidson E R Wade J W Simon K R C Hallowes, W L English C U Whitney T B Mitchell E Banks P T J O'Farrell C A Joll A. S M Palmer E E Cassidy L D Stamp H P Dawson, A M Laurie J Donaldson F U Williams H. M Reeve M F Emrys Jones S M Vassallo W G Riley J F Hornsey A Morton A Barker D Purdie R L. J Downer B Barnett J F Findlay H J Beddow N Leonard R L. Haines L. G Teece B F Thomas A D Crofts H J Rae, G C B Mieville C W Hutt, J S Mitchell R. S Roper P W Stewart F F Laidlaw H C Martin, A V Ledger, J Fletcher N C Rogers H Snape K. S Melvin J R Cameron G W B Shaw H H Molloy T Miller A Robertson N Bradley P E Carroll H J Holle M T D McMurrich A. Boyle E E Atkin L. T Kewer F Coates F D Parbury S L O Young N McC Hutchison F D Nicholson

G Hodge to be temporary Honorary Lieutenant

Officers relinquishing their commissions: Temp Capts H G Gillissie (Canadian A.M C) N E MacDougall M C. Burke F J Brodie G M Gregoire S J C Fraser and H J M Adams (on account of ill health) Temp Lieut A H McCandlish G C March and D North (on account of ill health) and E Fidlar

Temp Hon Capt C F R McDowall having ceased to be employed with the Moss Side Military Hospital relinquishes his commission

SPECIAL RESERVE OF OFFICERS

To be Lieutenants: A B Platt E N P Martland W T G Boul and N Kletz (from Manchester University Contingent O T C) W Fidinow A G F McArthur R D Aylward (from the University of London Contingent O T C) S H de G Pritchard F W A. Watt W M Jones (from Manchester University Contingent O T C) H M Holt (from Leeds University Contingent O T C)

TERRITORIAL FORCE.

To be acting Lieutenant Colonels whilst commanding a Field Ambulance: Major F W Johnson and Capt L. A Dingley

Major (acting Lieut Col) G Ashton relinquishes the acting rank on ceasing to command a Field Ambulance.

Capt H F Humphreys is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services

Capt B H C Lea Wilson remains seconded for duty with the Egyptian Army

Captain W Seymour is restored to the establishment

Capts. (temp. Majors) A. Young and L G J Mackey relinquish their temporary rank on alteration in posting and are restored to the establishment

Capt J P Fagan relinquishes his commission on account of ill health

Lieut D H Burleigh from Special List to be Lieutenant

VOLUNTEER FORCE.

W F Bond 2nd Battalion Derbyshire Volunteer Regiment and W R Paton 3rd Battalion to be Lieutenants and Medical Officers

DEATHS IN THE SERVICES

Lieutenant Colonel Alfred F S Clarke late R.A M C died at his residence at Bexhill-on Sea on August 11th aged 73. He joined the Army in 1861 as staff assistant surgeon and was appointed later assistant surgeon to the Black Watch in India. He was afterwards assistant surgeon subsequently reaching the rank of surgeon major in the Royal Artillery and was at one time attached to the famous A Battery A Brigade of the Royal Horse Artillery The Chestnut Troop" Later he became surgeon to the Royal Military and Staff College Sandhurst where he served for 22 years. In 1876 he received the thanks and praise of the Duke of Cambridge then Commander in Chief for his prompt and energetic action in preventing the spread of an epidemic of diphtheria in the Sandhurst College

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THE LATE MR JAMES MCCULLOUGH L R C P & S EDIN —The death is announced of Mr James McCullough which took place on August 2nd in the Royal Victoria Hospital Belfast where he underwent an operation on July 11th He succumbed owing to heart failure A native of Saintfield Mr McCullough practised for years in Belfast where for a time he was a member of the board of guardians One of his sons is a member of the medical profession and one of his daughters is a nurse

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Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH

THE RENAISSANCE OF MEDICINE

To the Editor of THE LANCET

SIR —The intervention of Sir Clifford Allbutt[1] in this discussion emphasises the difference between the old and new schools Hitherto the description and investigation of disease have been left mainly in the hands of hospital and consulting physicians and laboratory workers, who have dominated the profession and have believed that their methods and opportunities were such as enabled them to survey the whole field of medicine They have not realised that on entering on their work they put on blinkers which restricted their outlook, so that their field of experience has been extremely limited, and that there were whole fields essential to the progress of medicine outside their ken For instance there is one great field that needed investigation which the events of to-day have forced us to consider—the amount of work a man in impaired health is capable of undertaking This is a matter which every general practitioner has to consider, and no precise information is to be found anywhere When the enlightened management of the London Hospital asked me to organise a cardiac department I seized the opportunity to start a clinic with the specific purpose of finding out how much work an individual with a damaged heart could undertake and the best means for keeping him or her at work My reason for doing this was that when in general practice I had forced on me the importance of the subject, and although for many years I had studied the subject, I found it too big a problem for me to solve

To-day the importance of a knowledge of what amount of effort an individual in impaired health can undertake is realised The State in its hour of necessity has called upon the medical profession to undertake the recruiting of impaired individuals for military work The military medical authorities took up this work utterly unconscious of the fact that they did not possess the necessary knowledge Suppose a man whose life had been spent in navigating boats in a canal was suddenly asked to take charge of a sea going ship Suppose such a man was ignorant of the laws of navigation, and, worse still, did not know that he was ignorant—it requires no prophet to tell that his ship would likely meet with disaster Is there then any need to be surprised that the attempts made by the military authorities met with disaster? Had even the College of Physicians taken charge of the recruiting the same disastrous result would have followed, because the knowledge necessary for the undertaking does not exist

This failure has come about because the teachers of medicine have never properly studied the question, and the reason probably is that they never realised there was such a problem but foolishly thought that their limited experience had given them the necessary knowledge. Many, like Sir Clifford Allbutt, do not realise that a life spent in a narrow sphere has dimmed their vision, so that they can neither appreciate the necessity for other methods nor understand their results I say, with all respect to such an erudite man and eminent clinician, that he has totally failed to grasp the significance of the movement which is gradually beginning to affect the whole field of clinical medicine This is shown in his letter, for it is evident that he has failed to grasp the significance of the principles which should guide the clinical investigator—viz., to search for the mechanism by which a symptom is produced and to find out the effect which the cause of the symptom has on the patient's future Doubtless he fancies such principles trite and commonplace and to have been employed continually by him and his fellows Yet if the matter be looked into it will be found that the old school never really understood their significance nor their application

I could turn to numerous instances in the writings of Sir Clifford Allbutt to demonstrate this but let the following instance suffice In Allbutt and Rolleston's "System of Medicine," vol vi, p 502, discussing irregular action of the heart, he makes the following statement "I once found this kind of intermittence in two brothers who came together to me for life insurance, both of them were very angry with me for refusing them, or rather for stating the facts that led to their refusal" It is manifest from this statement and from the context that he had no idea of the nature of the intermission of the pulse in these cases During the years he had been a hospital physician and a consultant he *must have come across hundreds of these cases*, and yet it never occurred to him that it was necessary to find out how this abnormal sign arose so as to distinguish this particular sign from others that resembled it That is to say, he neglected to take the first step in prognosis—differentiation In rejecting the candidate he gives no reason for doing so, and it is manifest that he could have no accurate knowledge to guide him, so that he falls back on guess work, oblivious of the harm he may do the individual whose medical examination was committed to his care, and oblivious of the harm done to those who read his book and would be guided by his authority

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[1] THE LANCET August 4th 1917 p 172.

When I say he does not realise the importance of these principles I have enumerated I do so because in his reference to my polygraph work he shows that he has not realised that this is but an infinitesimal part of my work, and that all graphic methods merely help to find out the mechanism by which some sign is produced He has failed to understand not only the methods of my work but the need for these methods Clinical medicine is a large field, and some employ one method and others employ other methods. Sir Clifford Allbutt has studied heart affairs from his point of view, and I have studied them from mine When he tells us as a result of his methods that "kinetic energy lost at each beat equals *3600 n* per hour," or that "eddies change linear into turbulent stream motion," I frankly confess I don't understand him and refrain from criticising When I on my part give the results of my observations he plainly does not understand, but he is not deterred from criticising When, for instance, he criticises my statement that the first sign of heart failure is the sensation produced by a limitation of the heart's power to respond to effort it is at once apparent he does not understand what I have said

When a patient consults a doctor and the doctor detects an abnormal sign in the heart the question that should guide the doctor to a clear issue is, *Does this sign indicate* heart failure or does its presence foreshadow its oncoming? This implies a knowledge of what is heart failure I have read the works of ancient and modern writers to find out what was their conception of heart failure, and though I searched the writings of English, French, and German authors I failed completely to get from any one of them a clear conception of what they meant by heart failure Recognising that this might be due to my stupidity, I asked an able colonial doctor who came to work in my department to look into the matter He wished to follow out a line of investigation, and I suggested to him to study heart failure, but first of all to read up the authorities After three months' careful study he stated that he could not find in a single book an intelligent description of heart failure I have looked through Sir Clifford Allbutt's writings and can find no help in this matter When I began my work in following patients up to see what happened to them I really was on the look out for heart failure I therefore was able in many cases to detect the early signs of heart failure Without exception the very first sign was a sensation indicating a limitation of the field of cardiac response to effort This involved a prolonged inquiry into the nature of the sensations and their differentiation—a field of inquiry of the utmost difficulty It may seem to the superficial observer that to find out whether a man's powers are limited or not is an easy matter, but I found it a very difficult matter, and the first thing I realised was that I was not sufficiently educated to understand the meaning of the symptoms These sensations of exhaustion were so varied, provoked in so many different ways, were simulated by so many other conditions that it took me many years before I saw daylight Sir Clifford Allbutt's remarks upon "effort-tests" are quite beside the mark and show that he has failed completely to comprehend the line of investigation as he has failed to comprehend the significance of the results I have elsewhere explained my view of heart failure, the result of such a patient inquiry that neither Sir Clifford Allbutt nor any of the old school has ever undertaken I do not for one moment say that this view is correct, I merely put it forth as representing a provisional conclusion reached at this stage of investigation

When following out the second of the principles of investigation—finding out what happened to people who showed an abnormal sign—I had necessarily to watch great numbers of people through many years In doing this I observed frequently the onset of heart failure and watched its progress, carefully noting all the signs and symptoms I could detect In doing this my attention was directed to many phenomena which had either been overlooked or neglected It was in the course of this inquiry that I realised the importance of a patient's sensations Now there is a widespread belief that it is the simplest thing in the world to find out a patient's sensations and estimate their value Indeed it is supposed to be so simple that learned authors in treatises on diagnosis barely mention the subject, it being what is called "common knowledge." On the other hand, I found it one of the most difficult matters in the examination of a patient Every genuine sensation has a physical cause in its production, and these sensations have a connexion direct or indirect with the disease from which the patient is suffering In a great many cases they are the only signs of the presence of a disease, so that if we would find out what was the matter with our patient we have to understand the nature of the patient's sensations. Would it be believed that up to recently no serious attempt had ever been made to investigate a patient's sensations! Take, for instance, the simple sensation of an unusual beating of the heart, which the patient may call palpitation. Hitherto the clinician might make a note that the patient had palpitation, unaware that if he understood the meaning of that single sensation he would get the clue to the man's trouble. But no physician in the past had any conception of how to *bring to light the information behind the patient's sensations*, and he did not know how so set about acquiring that knowledge This is how I attempted to get a knowledge. As a general practitioner I had the opportunity on many occasions of seeing patients when they had an attack of what they called palpitation I carried with me a sphygmograph and obtained a record of the pulse during the attack. I carefully inquired of the patient what his sensations were during the time he was suffering from an attack. I found from my *records that the heart acted in a* variety of ways during the palpitation, and as time went on I was able to refer the different ways of acting to different abnormal states. I was able to co-relate the sensations of the patient with these different states, so that now when a patient tells me he has attacks of palpitation I put such questions to him which bring out certain peculiarities which enable me to recognise, in the majority of cases, the nature of the attack and its cause As the causes of palpitation are varied, some directly due to affection of the heart, others due to affections of other organs, and others due to the general state of health, I learnt to differentiate many of them, and was led to detect obscure disease in other organs I cite this as an example of the methods I had to pursue to understand the meaning of each individual sensation, and the reader will surely recognise that in no other way could we get the necessary knowledge But it will be seen before I was able to understand the sensations I had to go through a long preliminary education Now what I did with palpitation I did with other sensations, as the sense of exhaustion, breathlessness, pain, and so forth I was always careful to note the condition of the heart and accompanying phenomena, so that when I describe my view of heart failure it will be understood that my conclusions were not based upon superficial and casual observations

There was another point that came out of this method of investigation—viz, that the onset of disease is first heralded by the patient's sensations Long before physical signs are evident the patient is conscious there is something amiss It follows, then, that if we are ever to be able to recognise the early stages of disease we must be able to interpret the patient's sensations In order to acquire that knowledge we must go through a preliminary education after the fashion I have described in my attempt to understand palpitation When Sir Clifford Allbutt enumerates a number of diseases on which great strides have been made in the knowledge of the early stages, I reply with conviction that this so-called progress is more apparent than real, and that no such progress can take place until the patient's sensations are understood, and towards that end no physician has ever educated himself or been educated to be able to appreciate the significance of a patient's sensations. Take gastric ulcer for instance—a patient's sensations here are the earliest guide. He may have heart burn. What is heartburn? Neither Sir Clifford Allbutt nor any other physician has the remotest idea of the mechanism underlying its production. Or take pain—the elementary knowledge for understanding pain is not yet known to the profession. We even do not know what tissues are capable of producing pain. So long as we are so profoundly ignorant of the meaning of this sensation, so long will we fail to make the slightest progress in our knowledge of the early stages of disease. The man who says we possess sufficient knowledge wilfully shuts his eyes to the light and the truth is not in him.

This leads on to a still more important matter calling loudly for a new conception and practice in the teaching of medicine. What I have said about the patient's sensations being the earliest sign of disease will, I think, scarcely be contested. Now it is the earnest desire of everyone to detect disease at the earliest possible moment, as it is then most amenable to treatment. From what I have said it will be gathered that the recognition of the patient's sensations is the most difficult part of the examination and the knowledge can only be acquired after a great deal of experience and years of study.

Consider the attitude of the hospitals towards this subject. Disease in its earliest and most curable stages, before there is a physical sign, while yet there is but the patient's sensation to tell he is ill, is practically relegated to the out-patient department. Disease when it is so far advanced as to produce a physical sign, which means usually damage to the tissues, and is therefore beyond the stage of cure, is admitted to the hospital wards. I put the matter broadly, though here and there exceptions may be found, but any observing person will admit its truth. To recognise a physical sign is comparatively easy, to recognise the patient's sensations is extremely difficult. To whom does custom allocate the division of work? The easily recognised stage of disease is given to the experienced physician, whereas that stage most hopeful for treatment but where the symptoms are the most difficult of recognition, is handed over to the young and inexperienced junior!

Does not such a glaring anomaly call for a reform? Can the ideas which countenance and permit such a condition of affairs be right? Does it not show clearly that the present-day conception of clinical medicine is altogether wrong, and that a renaissance in medicine is urgently called for?

How is this to come about? I must confess I have no hope whatever in the old school. They have been so long in the bonds of tradition that it is impossible for them to understand a new conception. My hope is in the younger men who are not yet crippled. If the younger teachers will take as their guide this principle: Never teach things which are given you only on authority. Before you teach your students a simple fact verify it from your personal experience or search in the writings of your authorities for their reasons in making a statement. Weigh these reasons carefully and let not the weight of the reputation of the authority affect the balance, but be guided dispassionately by the facts he produces in evidence.

I am, Sir, yours faithfully,

London, August 11th, 1917. J. MACKENZIE.

THE ACTIVITY OF CERTAIN FERMENT PREPARATIONS

To the Editor of THE LANCET.

SIR,—In the course of a research on the coagulation of the blood I was necessary to use various preparations of ferments. Some eight preparations of trypsin, five of papain and two of rennin were tested and found to possess varying degrees of activity. The [illegible] four trypsins were Messrs. [illegible] Pancreatin [illegible] and Pancreatin (solid) and Messrs. Allen and Hanburys' [illegible] Trypsin Co. and [illegible] (solid). All samples of these four extracts were found to be [illegible] active preparations, the different methods of extraction conferring on each special advantages. On the other hand, a solid trypsin bearing a well known American name and purchased from a leading pharmaceutical chemist in London had little activity, while three other specimens of solid trypsins bought locally were practically without tryptic action. Four papain powders, for which large prices were charged, were found to have no digestive activity, and a papaw fruit which was obtained from Durban and arrived in a slightly mouldy condition also proved to be without action when tested. Of the two rennins, one was Messrs. Benger's and was an exceedingly active coagulant of milk, but a tabloid preparation of this ferment, bearing the name of the American firm already referred to in connexion with a trypsin, was found to be inactive. This is remarkable when one remembers how easily a rennin effect is obtained and how many ferments can coagulate milk. The experience, as a whole, shows how necessary it is to test preparations of ferments before assuming that they have the characteristic activity. I learned from one large firm that they had found most papain preparations on the market to be without action, and my own limited experience bears this out.

The research referred to dealt with the coagulation of the blood and was not concerned directly with the estimation of the value of various ferment preparations. It will appear in the *Journal of Physiology*.

I am, Sir, yours faithfully,

August 9th, 1917. W. NEVILL HEARD.

AGGLUTINATION TESTS IN TYPHOID FEVER, ETC.

To the Editor of THE LANCET.

SIR,—May a humble and undistinguished searcher after pathological truth venture to interpose in the agglutination controversy which enlivens your columns from time to time? There can be no doubt that the Oxford School has done valuable service to clinical pathology in pointing out the errors of those who condemn any agglutination method as useless in the diagnosis of the enterica group in these days of T.A.B. inoculations, and of those who maintain that a single positive reaction is diagnostic even in inoculated persons. It has also substantiated the value of the drop-pipette method as against the more tedious volumetric method with graduated pipettes. But there, I am inclined to think, their real service has come to an end. Whether standard agglutinin unit estimation has any future in more exact research work (as Captain Ainley Walker suggests in THE LANCET of Nov. 25th, 1916) I will not judge, but in my opinion it is, for many reasons, unsuitable and unnecessary where a large number of sera have to be tested, and especially as a method for use outside the laboratory. Agglutination tests should be within the scope of every practitioner who wishes to do some at least of his own clinical pathology, but it is obvious he will acquire the simplest technique which will give reliable results. In the laboratory some pathologists habitually turn over all the agglutination work, and even the readings, to an attendant; others prefer to take the responsibility only of their own work. In the laboratory work of a general hospital—at any rate a military hospital—there is no time for ultra elaborate technique. Only the proved unreliability of all other methods could justify the use of the Oxford technique as a general method.

Has the Oxford School proved all other methods to be unreliable? Not at all. After all, the essential point of the Oxford technique—not the only one, but the essential one—is the repeated examination of the patient's serum by the same technique. The personal equation comes in in the reading of "the highest dilution in which marked agglutination (without sedimentation) can be detected" (which is *standard agglutination* according to the Oxford directions) just as in any other method. And when it comes to nine possible readings[1] followed by mathematical calculations from an arbitrary key of values and averages struck from these, then I think the possibility of error must be much increased, and in any case the burden becomes intolerable. This is surely wholly unnecessary. "Agglutinin units" are in danger of becoming a fetish. A rise or fall of agglutinin content is the same whether in units or litre if the same method is used by the same observer, and if the serum dilutions are not too widely separated (which applies to any method) a curve can be plotted out equally well in both cases The important matter is to use the same technique and the same emulsion of known sensitiveness in each case There is no difficulty about this if a good strain of organism is kept properly subcultured and a fresh batch of emulsion made about every two months, such fresh emulsion being tested at intervals against a known high titre serum

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[1] Dreyer and Inman: THE LANCET, March [illegible] 1917.

I am, Sir, yours faithfully,

ARTHUR H PRIESTLEY,
Captain R A M C

Aldershot, August 8th 1917

THE ADMINISTRATION OF EMETINE

To the Editor of THE LANCET

SIR,—Emetine is being utilised so largely in treatment that it may be worth while to draw attention to a better method of administering it than that generally employed at present Since emetine was first advocated by Sir Leonard Rogers in the treatment of amœbic dysentery, it has always been given hypodermically Dixon ("A Manual of Pharmacology," fourth edition) states —

> If ipecacuanha is injected subcutaneously pain and inflammation followed by suppuration and the formation of an abscess are produced at the seat of inoculation The action of cephaeline and emetine is the same as that of ipecacuanha

In actual practice, the subcutaneous injection of emetine and its allied alkaloids does not produce abscesses at the sites of inoculation except in a small percentage of cases There is always, however, great pain, with redness, swelling, and induration, which is often so deep-seated that muscular movement becomes an agony Local tenderness is often very acute, and I have had several cases where the patient refused further emetine injections after the first one or two because of the pain, and I sympathised with them It has also to be remembered that dysentery is sometimes followed by neurasthenia, and the patient is not disinclined in these cases to put the blame for his woes on the emetine

The method of administration that I have adopted and find most satisfactory is intra muscular injection The best sites are on the upper arm over the deltoid and in the gluteal region A prolonged course of treatment can be given in this way without causing any inconvenience to the patient There is no pain and sometimes only a little tenderness at the site of injection 24 hours afterwards Injections can be given on alternate arms day by day Summarised briefly, the advantages of the intra muscular method are as follows 1 Pain during inoculation is limited to the prick of the needle 2 After pain is generally absent, and when present disappears within 24 to 48 hours 3 There is no tenderness, swelling, induration or discolouration of the skin, and scarring is minimal or absent 4 The efficacy of the drug may be increased as there is probably less precipitation through more rapid absorption 5 The same site of inoculation may be used repeatedly at intervals of 48 hours

I am, Sir, yours faithfully,

P FIGDOR, M B Ch.B Glasg,
Temporary Captain, R A M C; Late Temporary Physician to Out patients City of London Hospital for Diseases of the Chest, and Assistant Medical Officer North Eastern Hospital

Lucknow India, July 24th

THE EXPECTATION OF LIFE IN AORTIC REGURGITATION

To the Editor of THE LANCET

SIR,—In his letter to THE LANCET of August 4th Sir Clifford Allbutt, referring to a statement by Sir James Mackenzie that a man with aortic regurgitation may reach his "normal span," exhibits his scepticism of the accuracy of that statement by remarking that were Sir James Mackenzie a writer of less authority he would boldly answer "Never" It seems that the case of longest duration of life from the establishment of an aortic regurgitation which he (Sir Clifford Allbutt) has witnessed was 23 years and that the patient died quite suddenly at the age of 55 It may therefore be of interest to your readers to know that I am now in attendance on a lady who is 72 years of age, and has in all probability had aortic regurgitation for the last 50 or 60 years She had a mild attack of rheumatic fever at the age of 14, and a second, which she describes as a bad attack, at the age of 18 She was then under the care of the late Dr Robinson, of Newbury, who informed her of the fact that she had a weak heart," a statement which was subsequently confirmed by the late Dr Wilks, of Ryde, Isle of Wight, "40 years or more ago" For the last 10 years she has been under the care of my partner, Dr W H Fawcett, who has observed the condition of the heart on many occasions, and who is thus able to confirm the diagnosis of aortic regurgitation, a condition which has led to only a very moderate degree of hypertrophy and dilatation of the left ventricle, and which has given rise to no symptoms other than occasional attacks of giddiness and faintness I might add that the only other illness from which the patient has suffered was an attack of diphtheria at the age of 22, but, as Sir William Osler remarks, "Simple endocarditis in diphtheria is rare," whilst in rheumatic fever it is exceedingly common She probably owes the immunity which she has enjoyed hitherto to the fact that she has remained single, and has never been obliged to undertake any hard physical exertion Needless to say, I look upon this case as the exception which proves the rule, and the rule is too well known to need reiteration

I am, Sir, yours faithfully,

J STANLEY AVERY

Bournemouth, August 8th, 1917

URBAN VITAL STATISTICS

(Week ended August 4th, 1917)

English and Welsh Towns —In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17 000,000 persons, the annual rate of mortality was 10 3 per 1000 which is 0·9 per 1000 less than that recorded in the previous week In London, with a population exceeding 4 000 000 persons the death rate was 10 3, or 0·1 per 1000 below that in the previous week among the remaining towns the death rates ranged from 3 9 in Ilford 4 4 in Enfield and in Great Yarmouth and 5·2 in Grimsby to 15·7 in Blackpool, 16·8 in Carlisle, 17 3 in Rotherham and 17 5 in Southampton The principal epidemic diseases caused 287 deaths which corresponded to an annual rate of 0·9 per 1000 and included 107 from infantile diarrhœa, 95 from measles, 39 from diphtheria 37 from whooping-cough, 4 from scarlet fever, and 5 from enteric fever The deaths from diarrhœa were 12 above the number in the previous week and included 28 in London 13 in Liverpool 11 in Manchester and 10 in Birmingham. Measles caused the highest death rates of 2 4 in Northampton and 2·7 in York The 625 cases of scarlet fever under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 25 fewer than the number in the previous week; the 1111 cases of diphtheria showed an increase of 30 Of the 3357 deaths from all causes in the 96 towns 133 resulted from violence The causes of 29 deaths were uncertified of which 7 were registered in Birmingham, 6 in Liverpool, and 2 each in Warrington Barrow in Furness and Gateshead.

Scotch Towns —In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500,000 persons, the annual death-rate was 10 8 against 12 5 and 12·9 per 1000 in the two preceding weeks The 240 deaths in Glasgow corresponded to an annual rate of 11 2 per 1000 and included 14 from whooping-cough 8 from infantile diarrhœa and 6 from measles The 75 deaths in Edinburgh were equal to a rate of 11·5, and included 2 from measles and 1 each from whooping cough, diphtheria, and infantile diarrhœa.

Irish Towns —The 113 deaths in Dublin corresponded to an annual rate of 14 8 or the same as the rate in the previous week and included 14 from infantile diarrhœa 2 from whooping-cough, and 1 from enteric fever The 84 deaths in Belfast were equal to a rate of 11 1 per 1000 and included 2 from infantile diarrhœa, and 1 each measles and whooping-cough

(Week ended August 11th 1917)

English and Welsh Towns —In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17 000,000 persons, the annual rate of mortality was 10 4 per 1000 and was 0·1 more than that in the previous week In London with a population exceeding 4 000 000 persons the death rate was 10 3, and coincided with that recorded in the previous week among the remaining towns the death rates ranged from 4 1 in Walthamstow 4 4 in Barrow in Furness 4·9 in Willesden, and 5·5 in Wakefield to 16 1 in Dewsbury 16 7 in Dudley 17·6 in Oxford and 17 7 in Hastings The principal epidemic diseases caused 328 deaths which corresponded to an annual rate of 1·0 per 1000 and included 180 from infantile diarrhœa, 78 from measles, 31 from whooping-cough 29 from diphtheria, 6 from scarlet fever and 4 from enteric fever The deaths from diarrhœa were 221 in excess of the number in the previous week and included 67 in London 16 in Liverpool, 10 in Manchester 9 in Birmingham and 8 in West Ham Measles caused the highest rates of 2·7 in Stockton-on Tees and 3·6 in Northampton The 633 cases of scarlet fever under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were 8 above the number remaining at the end of the previous week the 1071 cases of diphtheria showed a decrease of 40 Of the 3394 deaths from all causes in the 96 towns 111 resulted from violence. The causes of 29 of the deaths were uncertified of which 6 were registered in Birmingham 4 in Liverpool, 3 in St. Helens, and 2 each in Leicester and Manchester

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500,000 persons, the annual rate was 11 2, against 12 9 and 10 8 per 1000 in the two preceding weeks The 242 deaths in Glasgow corresponded to an annual rate of 11 3 per 1000, and included 17 from infantile diarrhœa 9 from whooping-cough and 7 from measles. The 71 deaths in Edinburgh were equal to a rate of 11 2 per 1000 and included 1 each from whooping-cough and infantile diarrhœa

Irish Towns —The 115 deaths in Dublin corresponded to an annual rate of 15·0 per 1000 and included 18 from infantile diarrhœa 2 from diphtheria and 1 each from measles and whooping cough The 88 deaths in Belfast were equal to a rate of 11 7 per 1000, and included 1 each from measles whooping cough and infantile diarrhœa

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt H A. Harris, R.A M C, attached Royal Field Artillery, was educated at Cambridge and at St Bartholomew's Hospital London, and qualified in 1910 He was in practice at Putney, London, prior to joining the R.A.M C

Capt A S Taylor, R.A.M C attached Highland Light Infantry, qualified at Edinburgh in July, 1914, and joined the R A.M C soon after the outbreak of war

Capt B M Hunter, R A.M C, attached Cambridge Regiment qualified at Glasgow in 1909, and for a time practised at Consett Co Durham, and afterwards at Stevenston, Ayrshire

Capt W R Aspinall, M C, Australian Army Medical Corps

Major W D Kirkland, M.C, Australian Army Medical Corps

Surgeon Probationer A. M Horsey, R N V R

Died of Wounds

Capt R W Shegog, R A.M C, qualified at Dublin in July, 1915, and joined up shortly afterwards

Capt N G Chavasse V C, M C R.A.M C, attached to the Liverpool Regiment was educated at Oxford and at Liverpool University, and qualified in 1912 He was a well known athlete at Oxford and prior to the war he was medical officer at the Royal Southern Hospital, Liverpool The award of the M C was recorded in THE LANCET of Jan 22nd, 1916 p 215 and of the V C in THE LANCET of Nov 4th 1916, p 805

Died

Fleet Surg E C Ward R N, was educated at Queen's College, Cork and at Edinburgh University, and qualified in 1853 He died at the Royal Naval Hospital, Chatham

Wounded

Capt W B Allen V C M C R A.M C

Capt H P Partridge, M C R A M C

Lieut D S Pracy R A M C, attached Liverpool Regiment

Capt H Robinson, R A M C attached Liverpool Regiment

Capt T D Renwick R.A M C

Capt D D Craig M C R A M C attached E Lancs Regt

Capt W F David M C, R A M C, attached Cameron Highlanders

Capt E Evans R.A M C

Lieut G L Gall R A M C

Capt D McVickers R A.M C, attached Coldstream Guards

Capt J Ross R A M C attached King's Royal Rifle Corps

Capt F B Chavasse R A M C attached Liverpool Regiment

Capt F S Fletcher R A M C

Capt I C MacLean M C, R A M C attached Rifle Brigade

Capt G C Robinson R A M C attached Liverpool Regt

Capt J Warwick R A M C attached Liverpool Regiment

Capt C W Treherne R.A M C

Capt I P Charles, R A M C attached Herts Regiment

Capt W S Wallace R A M C

Missing

Lieut J Rickards, R A M C attached Royal Scots

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Capt P F C d E Wheeler Dorset Regt attached to the Royal Flying Corps killed whilst flying in England eldest son of Capt P C F d E Wheeler R A M C of Worthing

Second Lieut T M O'Neill Royal Flying Corps severely injured whilst flying in France son of the late Dr H O'Neill J P of Belfast

Capt J F Swain Royal Garrison Artillery killed in action, eldest son of Dr W L Swain of Wimbledon hill London and formerly of São Paulo Brazil

Capt H Chronnell M C Loyal North Lancs Regiment killed in action only son of Dr J Chronnell of Hindley, Lancs

Second Lieut W F Francis Hertfordshire Regiment killed in action third son of Dr L A Francis of Uxbridge Middlesex

Second Lieut J J F Shand Royal Garrison Artillery killed in action only son of Fleet Surgeon J Shand R N

Second Lieut A H V Beatty Manchester Regiment killed in action eldest son of Dr T B H Beatty of Harrow Middlesex

OBITUARY OF THE WAR

EDWARD RAYNER, M.B, B C CAMB F R C S ENG

SURGEON ROYAL NAVY

Surgeon E Rayner, who was killed in the explosion which destroyed the *Vanguard*, aged 31 years, was elder son of the late Edward Rayner of Wadhurst Sussex Educated at Heddon Court and the South Eastern College, Ramsgate, at both of which he was conspicuous in sports he entered Pembroke College Cambridge taking a first-class in the Natural Science Tripos in 1908 and completing his medical studies at St Thomas's Hospital After taking his M B B C Camb, in 1912 he acted as house surgeon and casualty officer at his hospital while working for the F R C S When war broke out he offered his services to the Admiralty and was sent to Gallipoli with the R N Divisional Engineers He saw the campaign through from start to finish suffering himself from epidemic jaundice and becoming seriously ill after the evacuation Last autumn, after his recovery he was appointed surgeon to the *Vanguard*, where he remained until his death

A consulting surgeon with the armies writes of Surgeon Rayner I knew him well and had a high opinion of his ability and sound surgical judgment I heard from various sources of his fearless and devoted conduct ' Others speak of his cheery outlook on life—one who never complained of the monotonous life on board a battleship but was always an excellent messmate and companion

MARIAN ELIZABETH WILSON, M B, CH B EDIN

SURGEON TO THE SCOTTISH WOMEN'S HOSPITAL AT ROYAUMONT

Dr Marian Wilson who died on August 1st, was surgeon to the Scottish Women's Hospital Hopital Auxiliaire 301 Royaumont France Her death was due to an attack of acute appendicitis occurring at St Martin Vésubie Alpes Maritimes where she was taking a few weeks rest Miss Wilson belonged to a Scottish family, studying medicine at Edinburgh where she graduated in 1906 After holding the post of medical officer to York Dispensary she spent several years in Palestine as a medical missionary at Jaffa and Hebron On the outbreak of hostilities Miss Wilson went to Lausanne where she had already lived for several years thus acquiring a complete mastery of the French language and in November 1915 she joined the staff of the Royaumont hospital where her surgical experience and conscientious work made her a most valuable colleague Her devoted services to the French wounded were recognised in February 1917 when the French Government awarded her the Médaille des Epidémies en vermeil.

Her chief at the Royaumont hospital writes of Miss Wilson 'Her personal charm and her solicitude for her patients gained her their affection in an unusual degree and after their return to the front they not infrequently walked many miles and spent many hours of their short leave in paying her a visit In spite of a frail physique, with an admirable spirit Miss Wilson rose to the occasion during many periods of stress and fatigue The news of her untimely death has caused the deepest sorrow to her friends and comrades, in whose ranks her loss has created an irreparable gap "

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The National Efficiency Board here has classed the medical profession as one of the most essential of occupations Already out of 723 men on the Register at the beginning of the war 257 are on military service at home or abroad. Among the recommendations made were the following —

> That a board be set up of representative medical men from all the Dominion to hear all appeals against military service made by medical men and to make recommendations to the Government
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> That the services of any applicant for registration under the Medical Acts should be placed first at the disposal of the Defence Minister and if not needed by him then at that of the Health Department, and that agreement to such disposal should be a condition of registration
>
> That during the war men should not be allowed to change their location

The Minister proposes to introduce an Act of Parliament to give power to the Government to mobilise the whole profession so that they may be sent to any part of the Dominion which the Minister of Public Health may think fit This is regarded as being unfair to the profession, in that no other trade or calling has up to now, been mobilised for *home service* There is no doubt that in some of the outlying districts there is a scarcity of medical men but this scarcity has obtained for long before the war and the Government has been in the habit of offering premiums to men to settle in these places It is suggested by the medical profession that the Government should extend this system and grant say an honorarium of £560 (captain s pay) per annum with travelling allowances Where a medical man is called up by a ballot from a district that would be unduly denuded of medical help if he went into camp his place might be taken by a man from a better supplied centre At one of the recent sittings of the Military Appeal Boards the inspector of hospitals appeared in support of an appeal for exemption by a medical man in one of the country districts Asked by the military assessor "May we take it that you will appeal whenever you think that the safety of the outlying places is likely to be jeopardised by the doctor being take from the district ' Yes ' And if you do not appear we may take it that the man can be spared ? 'Yes It would seem from this that agreement between the medical profession and the Government has in a measure been anticipated but it is to be hoped that the *pourparlers* which are taking place will result in a way that will at once be fair to the country and the profession

DOCTORS OF MILITARY AGE —The Local Government Board of Ireland has now sanctioned doctors of military age for civil work in the sanitary service and the appointment of Dr D F Murnaghan as temporary medical officer of Omagh No 11 Dispensary District is allowed at a rate of payment of 4 guineas weekly

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

Sir W Watson Cheyne

SIR W WATSON CHEYNE took his seat in the House of Commons on Monday, August 13th, as Member for the Universities of Edinburgh and St. Andrews

Select Committee on Medical Examinations

Mr MACPHERSON, Under Secretary for War, appeared as a witness on Thursday, August 9th, before the Select Committee of the House of Commons, which is inquiring into medical examinations and re examinations for the Army in particular under the Military Service (Review of Exceptions) Act, 1917 Mr SHORTT was in the chair

Mr MACPHERSON stated that he had held the office of Under Secretary since December last He had assured the House of Commons on more than one occasion that no secret instructions had been issued with regard to the number of rejections of recruits He had on those occasions addressed inquiries on the subject to a department at the War Office, which obtained the requisite details, and he had to rely on that department He was assured that no instructions oral or other, were issued except under Army Council instructions

The CHAIRMAN You have undoubtedly read the secret instructions?

Mr MACPHERSON I have since this Committee began its sittings I first saw the confidential letter sent out by General Sir Alfred Keogh in print It was not based on an Army Council instruction It was a confidential document sent out by Sir Alfred Keogh, acting, no doubt, upon some instructions or other I never heard of the document before I saw it in print Such a document would not come before the civilian side of the War Office The facts on which he based his replies in the House of Commons were invariably signed by the head of the department concerned He was entitled to assume that the information had been got from the proper department

The CHAIRMAN If you had known that this document existed would you have given the same answer?

Mr MACPHERSON admitted that he would not He would not assent to the proposition that he had been misled It all depended on the view which the military authorities took They distinguished between a secret document and a confidential document The instructions sent out to heads of departments were not looked upon by the military as secret instructions A department had a perfect right to send out any instructions it liked so long as they dealt with the work of the department

Mr NIELD I understand that your replies given in the House are based on facts supplied by the departments, you wording them in your own phraseology?

Mr MACPHERSON That is so

Mr REES To the military mind secret instructions would only have regard to Army Council instructions?

Mr MACPHERSON I think so

Education and the Health of School Children

In his speech in introducing the Education Bill for England and Wales on Friday August 10th Mr HERBERT FISHER (President of the Board of Education) made striking reference to the need of conserving the health of school children and young persons and of promoting their physical efficiency The Bill is a comprehensive measure It proposes, amongst other matters to encourage the establishment of nursery schools to abolish all exemptions from school attendance up to the age of 14, to insist upon attendance at continuation day classes up to the age of 18 when full time education has not been received up to the age of 16 Dealing with the regulation of child labour, Mr FISHER said We desire a full period of school life unimpaired by the competing claims of employment for all children of the working population At the present moment the effect of our elementary school education is greatly harmed by the work which is imposed on children out of school hours They are liable to be employed for three hours before the school opens and for some hours after the school closes, and the general opinion of my inspectors is that of all the reforms affecting elementary education there is none more vital than the enforcement of strict limitation of the employment of children in their school going days This is not merely a question of scholastic efficiency It affects the physical welfare of the race We have now an overwhelming mass of evidence to the effect that the health of our children suffers from premature or excessive employment. You may trace the evil effects in diminished height and weight in curvature of the spine in cardiac affections, and in deficiency of the senses especially the sense of vision and in the bad dentition of our working classes The reports of our school medical service are full and spent many hours of their short leave in paying her a visit In spite of a frail physique, with an admirable spirit Miss Wilson rose to the occasion during many periods of stress and fatigue The news of her untimely death has caused the deepest sorrow to her friends and comrades, in whose ranks her loss has created an irreparable gap '

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[1] THE LANCET, July 2[illegible], 1917

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>
> That during the war men should not be allowed to change their location

The Minister proposes to introduce an Act of Parliament to give power to the Government to mobilise the whole profession so that they may be sent to any part of the Dominion which the Minister of Public Health may think fit This is regarded as being unfair to the profession, in that no other trade or calling has up to now been mobilised for *home service* There is no doubt that in some of the outlying districts there is a scarcity of medical men, but this scarcity has obtained for long before the war and the Government has been in the habit of offering premiums to men to settle in these places It is suggested by the medical profession that the Government should extend this system, and grant, say, an honorarium of £560 (captain s pay) per annum with travelling allowances Where a medical man is called up by a ballot from a district that would be unduly denuded of medical help if he went into camp his place might be taken by a man from a better supplied centre At one of the recent sittings of the Military Appeal Boards the inspector of hospitals appeared in support of an appeal for exemption by a medical man in one of the country districts Asked by the military assessor "May we take it that you will appeal whenever you think that the safety of the outlying places is likely to be jeopardised by the doctor being take from the district?" "Yes" ' And if you do not appear we may take it that the man can be spared?" "Yes It would seem from this that agreement between the medical profession and the Government has in a measure been anticipated, but it is to be hoped that the *pourparlers* which are taking place will result in a way that will at once be fair to the country and the profession

DOCTORS OF MILITARY AGE —The Local Government Board of Ireland has now sanctioned doctors of military age for civil work in the sanitary service and the appointment of Dr D F Murnaghan as temporary medical officer of Omagh No 11 Dispensary District, is allowed at a rate of payment of 4 guineas weekly

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[1] THE LANCET July 21st, 1917

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

Sir W Watson Cheyne

Sir W WATSON CHEYNE took his seat in the House of Commons on Monday, August 13th, as Member for the Universities of Edinburgh and St. Andrews

Select Committee on Medical Examinations

Mr MACPHERSON, Under Secretary for War, appeared as a witness on Thursday, August 9th, before the Select Committee of the House of Commons, which is inquiring into medical examinations and re examinations for the Army in particular under the Military Service (Review of Exceptions) Act, 1917 Mr SHORTT was in the chair

Mr MACPHERSON stated that he had held the office of Under Secretary since December last He had assured the House of Commons on more than one occasion that no secret instructions had been issued with regard to the number of rejections of recruits He had on those occasions addressed inquiries on the subject to a department at the War Office, which obtained the requisite details, and he had to rely on that department He was assured that no instructions, oral or other, were issued except under Army Council instructions

The CHAIRMAN You have undoubtedly read the secret instructions?

Mr MACPHERSON I have since this Committee began its sittings I first saw the confidential letter sent out by General Sir Alfred Keogh in print It was not based on an Army Council instruction It was a confidential document sent out by Sir Alfred Keogh, acting, no doubt, upon some instructions or other I never heard of the document before I saw it in print Such a document would not come before the civilian side of the War Office The facts on which he based his replies in the House of Commons were invariably signed by the head of the department concerned He was entitled to assume that the information had been got from the proper department

The CHAIRMAN If you had known that this document existed would you have given the same answer?

Mr MACPHERSON admitted that he would not He would not assent to the proposition that he had been misled It all depended on the view which the military authorities took They distinguished between a secret document and a confidential document The instructions sent out to heads of departments were not looked upon by the military as secret instructions A department had a perfect right to send out any instructions it liked so long as they dealt with the work of the department

Mr NIELD I understand that your replies given in the House are based on facts supplied by the departments, you wording them in your own phraseology?

Mr MACPHERSON That is so

Mr REES To the military mind secret instructions would only have regard to Army Council instructions?

Mr MACPHERSON I think so

Education and the Health of School Children

In his speech in introducing the Education Bill for England and Wales on Friday August 10th Mr HERBERT FISHER (President of the Board of Education) made striking reference to the need of conserving the health of school children and young persons and of promoting their physical efficiency The Bill is a comprehensive measure It proposes, amongst other matters, to encourage the establishment of nursery schools, to abolish all exemptions from school attendance up to the age of 14, to insist upon attendance at continuation day classes up to the age of 18 when full time education has not been received up to the age of 16 Dealing with the regulation of child labour, Mr FISHER said We desire a full period of school life unimpaired by the competing claims of employment for all children of the working population At the present moment the effect of our elementary school education is greatly harmed by the work which is imposed on children out of school hours They are liable to be employed for three hours before the school opens and for some hours after the school closes, and the general opinion of my inspectors is that of all the reforms affecting elementary education there is none more vital than the enforcement of strict limitation of the employment of children in their school going days This is not merely a question of scholastic efficiency It affects the physical welfare of the race We have now an overwhelming mass of evidence to the effect that the health of our children suffers from premature or excessive employment You may trace the evil effects in diminished height and weight, in curvature of the spine in cardiac affections and in deficiency of the senses, especially the sense of vision, and in the bad dentition of our working classes The reports of our school medical service are full of them Accordingly, we propose that no child under 12 shall be employed for profit, and here we have already been anticipated by bylaws passed in some of our large municipalities, and we further provide that no child under 14 shall be employed on any day on which he is required to attend school before the close of school hours or after 8 P M on that day, and on other days before 6 A.M or after 8 P M The House will observe that under this provision a child between 12 and 14 may be employed between 6 A M and 8 P M on Saturdays and during school holidays and although we have come to the conclusion that there is something to be said for a little employment on days on which the school provides no regular work, we are fully sensible that this liberty may be abused in the future as it has been in the past, and the Bill accordingly provides that the local education authorities, if they are satisfied, on the report of the school medical officer or otherwise, that the child is being employed in such a way as to be prejudicial to health or education, may forbid or regulate that employment We have also come to the conclusion that if the local education authority should decide that it would be wise to continue the elementary education in elementary schools either of the boys or the girls in their area or of boys or girls following particular occupations in that area, up to the age of 15, they shall be empowered to do so

In regard to physical training, the right honourable gentleman said The Government is desirous of taking this opportunity of assisting the physical education of the people in every possible way Physical training is already an element, although perhaps not a sufficient element, in our elementary school curriculum, and grants have recently been sanctioned for organisers of physical training in our public elementary schools The present Bill gives physical training a place in our continuation schools Every boy and girl in those schools will receive physical training It goes even further It empowers the local education authority to establish nursery schools for young children, to maintain playing fields, school baths or school game centres, and equipment for physical training, and it extends the powers and duties with regard to medical inspection now possessed by the local education authorities in the case of elementary schools and secondary schools under their control Let us consider what this means to a girl drawn from a slum in one of our great manufacturing towns She will be under the continued inspection and supervision of the School Medical Service She will have the advantage of physical exercise and remedial training as well as the practical training, which will be part of the work of the continuation schools

Colonel YATE Is physical training provided for in the continuation school for boys?

Mr FISHER Certainly The right honourable gentleman proceeded to deal with the other details of the Bill The State, he said, had need to secure for its juvenile population conditions under which mind, body, and character might be harmoniously developed

Welfare of the Blind

The Departmental Committee on the Welfare of the Blind has issued its report It states that the intervention of the State is required to secure (1) central control, organisation, and assistance for the existing agencies of voluntary help, which could be utilised with far greater effect if centrally directed, and (2) additional assistance for the blind It is recommended that a general department whose function shall be the general care and supervision of the blind shall be set up in the Ministry of Health whenever such a Ministry shall be created, and that in the meantime it shall be set up in the Local Government Board The report also recommends that steps should be taken to assure uniform and more effectual notification of the disease of ophthalmia neonatorum, and that immediate treatment of all cases should be secured

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HOUSE OF COMMONS

WEDNESDAY, AUGUST 8TH

Sir William Babtie

MAJOR DAVID DAVIES asked the Under Secretary for War whether the contents of the Vincent-Bingley Report of the Mesopotamia Expedition had been considered by the Army Council before the appointment of Sir William Babtie as Deputy Director General of Army Medical Services, and, if so, what reasons could be given for his selection for this post—Mr MACPHERSON replied Sir William Babtie was appointed Director of Medical Services, and not, as stated in the question, Deputy Director General Medical Service, at the War Office on March 18th 1916 The Vincent-Bingley report is dated "Simla, 29th June, 1916"

Mr HOGGE Does he retain his Indian pay?—Mr MACPHERSON All that I can say is that the War Office has suspended him On the question of his pay I refer the honourable Member to the India Office

The Army Medical Service

SIR GARROD THOMAS asked the Under Secretary for War whether he would state what salary was paid to members of the Medical Advisory Board of the Army Medical Service how many civilian doctors had a seat on it and how many times this Board had sat since August, 1914—Mr MACPHERSON answered There are 11 members, seven military and four civilian The civilian members are paid £200 a year each for their services on the Board Two military members receive extra pay of £150 a year and five receive nothing for this duty The number of meetings of the board was in 1913 ten and in 1914 seven No formal meetings have been held since August, 1914, but all the paid members have been constantly consulted and have given very valuable advice through the war

Mr PRINGLE Is it not advisable to have the opinions of these men in concert as a council as they were intended to be?—Mr MACPHERSON I am informed that most of these members are serving in various theatres of war

Sir GARROD THOMAS asked whether the honourable gentleman was aware that, although the number of civilian doctors now in the Army Medical Service outnumbered members of the regular Royal Army Medical Corps by more than ten to one, the civil doctors held none of the higher administrative posts which would give them power to introduce reforms or otherwise increase the efficiency of the Army Medical Service, and whether he would consider the desirability of taking action in this direction—Mr MACPHERSON replied At the present moment there are a large number of consultant medical men of the highest attainments employed both at home and abroad with the Army, and these distinguished men are in constant touch with the Army medical authorities with a view to introducing reforms and increasing the efficiency of the Army Medical Service in such ways as experience may prove beneficial Territorial and Reserve medical officers and civilians who have been granted commissions in the Royal Army Medical Corps during the war hold a fair share of the administrative posts in the Army Throughout the war the line that has been invariably taken is that the best man should be employed where his abilities had the most scope, but it must be remembered however eminent a civilian medical man's attainments may be, he would be out of place in certain high administrative posts in the Army through his want of knowledge of the administration and organisation of the Army as a whole Where this experience has been gained through service during the war these officers are equally available with Regular medical officers to posts of responsibility The whole subject has recently been under investigation by a Committee, the report of which may be shortly expected

Sir GARROD THOMAS asked whether the honourable gentleman was aware that owing to the uneconomical use of medical men by the Army Medical Service a number of hospitals in this country were understaffed that the supply of medical men to the civilian population was such that they could not hope to cope with a serious epidemic, that owing to this shortage a number of resident posts in hospitals had been filled by unqualified medical students, Chinese, Indian, and other coloured doctors, and that in many instances His Majesty's soldiers and their relations, including women during childbirth, depended largely on these for medical assistance, and whether he proposed to take any action in the matter—Mr MACPHERSON said in reply I would refer my honourable friend to answers which I have already given on this subject There is a committee in existence to safeguard the needs of the civilian population so far as medical men are concerned I may add that the Secretary of State is contemplating the appointment of a small committee to consider the use which is being made of medical men in France

Medical Equipment and Indian Troops

Mr MONTAGU (Secretary for India) informed Mr KING that the future scale of medical equipment for Indian troops was under the consideration of the Indian Government

Declarations under the Vaccination Act

Answering Mr SNOWDEN Mr HAYES FISHER (President of the Local Government Board) stated that the figures in regard to vaccination for 1915 were as follows declarations of conscientious objectors 293 315, births, 814 537, primary vaccinations, 375,330 The information for 1916 was not yet available

In reply to Mr WILKIE, Mr MUNRO (Secretary for Scotland) stated that the following were the figures in regard to vaccination in Scotland —

	1914	1915
Declarations of conscientious objection to vaccination	38,673	35,231
Births registered	123 934	114,181
Children vaccinated	63 433	61,456

Housing in Scotland

Mr MUNRO informed Mr DUNCAN MILLAR that the report of the Scottish Housing Commission was expected to be finished by the end of this month

In Committee of Supply on the note for the Local Government Board for Scotland, Mr DUNCAN MILLAR drew attention to the need for further housing accommodation in Scotland

In the West of Scotland particularly in the middle ward of Lanarkshire, the conditions of housing were very serious indeed and in fact, at present they constituted a serious menace to public health

Mr T B MORISON (Solicitor General for Scotland) replied that it was impossible to go into the details of housing policy for Scotland until the report of the Housing Commission had been received and considered That report, he understood, would deal not merely with city problems but also with problems which specially bore on certain country districts as well as upon those engaged in the fishing industry It would further deal with the compulsory acquisition of land by local or other authorities The most valuable portions of the report would be the recommendation of the provision of funds for carrying out a scheme of that kind a proportion of the cost to be borne by the State and a proportion to be borne by the local authorities In the meantime the Government had not been idle in regard to making preparations for dealing with the housing question in its general aspect Deputations had been received by the Secretary for Scotland and the matter had been before the Cabinet who had come to the decision that it was necessary to afford substantial financial assistance from the public funds to local authorities who were prepared to provide houses for the working classes and for those engaged in work connected with the war He thought a circular[1] had just been issued by the Local Government Board for Scotland from Edinburgh to the local authorities in which they were asked what their requirements were and the amounts necessary for their various districts, and the Local Government Board hoped that by Oct 15th they would be in possession of all the facts which were material to this matter

THURSDAY, AUGUST 9TH

Neurasthenic Cases in the Service

Answering Mr KING, Mr BARNES (Minister of Pensions) said There are 50 members of the Special Medical Board dealing with neurasthenic cases The board sits at Lancaster Gate daily and at numerous centres in the provinces once in three weeks or more frequently if necessary The fact of a man's discharge has been approved by the board is an absolute exemption under the Review of Exceptions Act The board have of course, the power to refuse discharge, but that power is exercised sparingly They have refused 50 cases out of 5000 They have no power to compel a man to re-enter the Army who has been discharged and they are always glad to have and frequently apply for, the opinion of medical men acquainted with the patient's previous history

MONDAY AUGUST 13TH

Medical Examinations in the Army

Mr HOGGE asked the Prime Minister whether he had observed in the Report of the Select Committee on the Military Service (Review of Exceptions) Act that in spite of the Army Council instruction issued by him when he was Secretary for War secret instructions were issued by officials under his control which destroyed the value of his own instructions, and whether he intended to take any disciplinary action —Mr MACPHERSON (Under Secretary for War), who replied, said My noble friend the Secretary of State for War declines to accept the description of this incident in the terms of my honourable friend's question and is not prepared to regard it as calling for any disciplinary action As a matter of fact the letter referred to was issued by Sir Alfred Keogh under proper superior authority It was intended to deal with what all those responsible agreed was a real danger Whether as the result of the issue of the Army Council instruction of Sept 7th or not wholesale rejections especially in certain parts of the country were taking place of men who were useful for Army service though admittedly not up to the standard required in combatant units It was therefore necessary to point out to the officials responsible for such rejections that Army service comprises a great variety of occupations answering roughly to those found in civil life, and that men capable of performing such service in the Army must not be rejected This was regarded as a perfectly legitimate corrective to administer to those by whom the mistake was being made and it was quite properly addressed to them direct by their immediate official superior The recipients of the letter already had the Council instruction and obviously the two were to be read together The letter was marked 'confidential" and not "secret" and if anyone takes the trouble to read the rules in paragraphs 1857-1864 of the King's Regulations dealing with the military distinction between these terms he will realise that no official would have marked as confidential a letter intended by him to secure what I gather my honourable friend alleges to be the sinister purpose of securing by a subterfuge a modification of the declared policy of superior authority

TUESDAY, AUGUST 14TH

Army Medical Service

On report of the note of £'000 for Army Medical Service,

Mr PETO raised the question of "manipulative surgery" He asked that there should be no further delay in giving injured soldiers the benefit of the treatment offered by Mr Barker and others who had proved that they could treat injuries to the joints successfully He alluded to the opposition of medical men to "manipulative surgery" and to the refusal of Sir Rickman Godlee and Sir F Taylor to give evidence to an informal committee which was investigating the subject It was because of the opposition of the medical profession that the War Office would not give an opportunity to manipulative surgery"

Sir JOHN SIMON said that he was one of the informal committee, which looked into the question from a legal point of view and not from that of medicine or surgery If the Army Council saw fit in any given case to authorise the soldier to consult one of these unqualified medical advisers—it might or might not be wise from a medical standpoint—it was a perfectly legal thing to do

Sir W WATSON CHEYNE in a maiden speech, said that he felt he could speak freely on this subject because he had made up his mind that from the time he took his seat in the House he should give up private practice but he had asked that he should be allowed to continue his work in a naval hospital If they made an exception in regard to this individual gentleman honourable Members had to remember that there were a great many bonesetters in London, and he did not think that they could be kept out. However excellent Mr Barker might be, the granting of facilities to these others would have the result of flooding the Army Medical Service with a set of irregular practitioners who were absolutely incompetent Where were they to stop? Let him say a few words about bonesetters generally The average bonesetter did not know even the names of the bones He had only one diagnosis and one method of treatment, and that was to wrench and twist the limb The human frame was a very delicate organism It should not be meddled with by people who did not know it as thoroughly as they ought to know it. There was no doubt that in many cases bonesetters had given relief and for some time it was puzzling to know how this was brought about The honourable gentleman proceeded to deal with surgical questions involved in the treatment of injuries to the joints A good surgeon would treat these much more safely than a bonesetter could do He had known a case where a bonesetter had broken a malignant tumour with a tragic sequel for the patient He was afraid that he was giving a surgical lecture Matters like this deserved very careful consideration, and the House must not be led by the success of one man in a small department of surgery to upset a whole organisation

Sir GARROD THOMAS in a maiden speech, called attention to medical arrangements generally in connexion with the Army He agreed with what had been done in regard to the supply of doctors in Mesopotamia, Egypt and Salonika In France, however which was near at hand, it was a great waste to keep medical men there who were employed only two or three hours a day or who were employed on work which others than medical men could do He cited several cases of this wastage of valuable material in France There was also shocking waste in employing specialists in surgery in some other department or even in sanitary work There was enough material to go round both for the Army and the civil population if it was properly used But as things were, owing to bad Government organisation he knew of a case where only one doctor was left to look after a population of 11 000 He suggested that the Government should institute an inquiry to determine the relative needs of the Army and the civil population for doctors

After further discussion Mr MACPHERSON (Under Secretary for War) said that his department had done everything possible to meet the civilian need for doctors There was a Central Medical War Committee composed of representatives of the Local Government Board, the National Insurance Department and the War Office, which considered the claims of the military and civil populations That Committee had done its work very well But the War Office must have first consideration for the treatment of the soldiers at the front It was a regrettable fact that there were cases where there was difficulty in getting doctors to meet the civilian needs but many regrettable facts had to be admitted Even assuming however, that there had been a waste of medical men at the front, the Secretary for War had stated that he would send a committee of distinguished men to France to inquire into the matter He hoped to be able to announce the names of the committee in a few days It must be remembered however that even if doctors were partially idle at the front it was most necessary to provide all medical men necessary for times when there was a large number of casualties In regard to the charge that the Army Council refused to utilise the services of a distinguished man because he was not a qualified practitioner he said that the inefficient treatment of the soldier was a thing which would make the Government quake There were two bodies to be considered The first was the Army Council They must consider whether it would be right or wrong to ask any soldier to undergo treatment except by a man who had passed the statutory test Then as to the other responsibility, he understood that there was no objection to a soldier on his own responsibility going, if he chose, to have treatment from an unqualified man He did not think he could be asked in the public interest to make any concession

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[1] This circular is identical in substance with the circular sent out by the Local Government Board for England and Wales on which we commented in a leading article last week.

The vote was then agreed to

Medical News.

St Thomas's Hospital Medical School —The following scholarships have been awarded —

Entrance Science Scholarships (1st £150 2nd £60) —J C Churcher and N S Macpherson being equal divide the two scholarships

Arts Scholarships (two) —W H Dunn and E G Housden (£15 15s)

London Intercollegiate Scholarships' Board —The following Medical Scholarships have been awarded — University College Bucknill Scholarship A J Morland, Sidcot School, Somerset, and University of London University College First Medical Exhibition C D Shapland, Streatham Hill College and University of London, University College Second Medical Exhibition V Feldman, Central Foundation School and London Hospital Medical College (The foregoing are subject to the confirmation of the College Committee) King's College Warneford Scholarships M Melglave, University of London, King's College, and P M Acheson, Dulwich College, and N W Snell, Alleyn's School, Dulwich (equal) Westminster Hospital Medical School Chemistry and Physics Scholarship J Pearce Newport Grammar School Shropshire London (Royal Free Hospital) School of Medicine for Women St Dunstan's Exhibition E V Adams, High School Croydon Isabel Thorne Scholarship D N L Leverkus, High School, Sydenham Mabel Sharman Crawford Scholarship E M Store, London (Royal Free Hospital) School of Medicine for Women Mrs George M Smith Scholarship E J Williams, Ladies' College, Cheltenham

Poliomyelitis in England and Wales —Only two cases of poliomyelitis were notified in London during July of this year compared with 18 cases in the corresponding month of 1916 In England and Wales the total number of cases notified last year was 689, the incidence rising sharply in the week ending July 22nd and again in the week ending August 19th This year the number again rose sharply in the week ending July 21st, the actual number of notifications in the June weeks being 1, 4, 7, 7, 5, in the July weeks 4, 3, 15, 6, and in the first August week 9

Brevet Colonel J Paul Bush, C M G, R.A M C, has been appointed a Deputy Lieutenant for Gloucestershire

The King has conferred Knighthoods upon Surgeon General Eugène Fiset C M G, D S O, Canadian Militia, Deputy Minister of Militia and Defence of the Dominion of Canada, and upon Dr Edward C Stirling, C M G, professor of physiology in the University of Adelaide

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to The Lancet *Office directed to the Sub-Editor not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication*

Pinker H G L.R C P M R C S has been appointed Deputy Honorary Medical Officer at the Pearn Convalescent Home near Plymouth

Thomas R S M D B C Cantab, and Thornton G L M R C P Lond M R.C S have been re-appointed Honorary Medical Officers to the Exmouth (Devon) Cottage Hospital

Wigham W H M D Durh has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Tattenhall District of the county of Chester

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

Ayrshire Lower District of Colmonell Parish —Medical Officer Salary £70 per annum

Barnsley and Wakefield Joint Sanatorium Committee — Assistant Tuberculosis Officer Salary £300 per annum, with board &c

Barnsley Beckett Hospital.—Two Female House Surgeons Salary as arranged with board &c

Bedford County Hospital.—House Physician, unmarried. Salary £160 per annum with board &c

Brighton County Borough.—Assistant Medical Officer Salary £350 per annum

Bristol Royal Infirmary —House Physician and House Surgeon. Salary at rate of £120 per annum with board &c

Cambridge, Addenbrooke's Hospital.—House Physician. Salary £150 per annum with board &c

Cheltenham Eye, Ear, and Throat Free Hospital.—Honorary Surgeon

Eastbourne Eye Infirmary —Ophthalmic Surgeon.

Great Yarmouth General Hospital.—House Surgeon unmarried. Salary £200 per annum with board &c.

King Edward Institution Albert-street Spitalfields E —Medical Officer for Maternity and Infant Welfare Centre for one Weekly Clinic. Salary 1 guinea

Leicester Royal Infirmary —House Surgeon. Salary £250 per annum with board &c

Lindsey (Lincolnshire) County of the Parts of —Female Assistant Medical Officer of Health Salary £400 per annum with travelling expenses

Liverpool Eye and Ear Infirmary Myrtle-street.—Female House Surgeon

Maidstone West Kent General Hospital —House Surgeon, unmarried Salary £250 per annum with board &c. Also Assistant House Surgeon Salary £125 per annum with board &c.

Manchester Union Nell Lane Military Hospital, West Didsbury —Locum Assistant Resident Medical Officer Salary £7 7s per week with board &c

North Eastern Hospital, St Ann's road Tottenham N —Female Assistant Medical Officers. Salary 7 guineas per week

Rochester St Bartholomew's Hospital.—Junior Resident House Surgeon Salary at rate of £150 per annum with board &c.

St Mark's Hospital for Cancer, Fistula and other Diseases of the Rectum City road E C —House Surgeon Salary as arranged with board &c.

Salisbury General Infirmary —House Surgeon Salary £150 per annum with board &c

Sheffield Jessop Hospital for Women Gynæcological and Maternity Departments —Senior Female House Surgeon unmarried Salary £300 per annum with board &c.

Sheffield Royal Infirmary —Two House Surgeons Salary £120 per annum with board &c

Swansea Education Committee.—Female Assistant School Medical Officer Salary £350 per annum

Walsall Education Committee.—Temporary School Medical Inspector Salary at rate of £400 per annum

Whitchurch near Cardiff Welsh Metropolitan War Hospital. —Resident Physicians

Wolverhampton and Midland Counties Eye Infirmary —House Surgeon Salary £150 per annum, with board &c.

Births, Marriages, and Deaths.

BIRTHS

Barber.—On August 10th at Temple-gardens Golders Green the wife of Surgeon C P Barber R N of a son

Frew —On August 10th at Portland-court W the wife of Dr Robert Frew of a son

Graham-Jones —On August 12th at Nottingham place, W the wife of T L Graham Jones Captain R A M C of a daughter

Hartigan —On August 12th at Gloucester-terrace W the wife of Thomas Hartigan M D of a son

Jewesbury —On August 6th, at Wimpole-street W.—the wife of Reginald C Jewesbury M D F R C P of a son

Platt —On August 7th at Daisy Bank road Victoria Park Manchester the wife of Harry Platt, M S F R C S., Captain R A M C (T) of a daughter

Pratt —On August 8th at Hainault Lodge, Chigwell Essex the wife of John Henry Pratt M.B Temporary Lieutenant, R A M C of a son

Purser —On August 7th at Lower Baggot-street Dublin the wife of Dr J J Purser of a daughter

Travers —On August 8th at Phillimore-gardens W the wife of Ernest Travers M D Lond of a son

MARRIAGES

Brown—Kempson —On August 6th, at Farnham Parish Church William Welch Brown R A M C to Katharine Esther Lois, daughter of Edgar Kempson Loadhams, Farnham

Scott—Schreiner.—On August 3rd at Holy Trinity Church Sloane-street, Captain Ralph Lester Scott R A M C to Ursula Hester younger daughter of the Right Hon W P Schreiner of South Africa.

DEATHS

Clarke.—On August 11th at Bexhill on Sea, Lieutenant Colonel A. F S Clarke R.A.M C (retired) aged 78

Horsey —On August 9th killed in action Arthur Mather Horsey Surgeon Probationer, R N V R

Rendle —On August 7th at Russell road W C Bainbridge Rendle, M R C S L R C P aged 81

Scobie.—On August 3rd, died of wounds, Lieutenant James Scobie, L D S R.C S Edin Gordon Highlanders aged 36

Toulmin —On August 2nd killed on one of H M ships Surgeon Stewart Newnham Toulmin R.N

N.B —A fee of 5s is charged for the insertion of Notices of Births, Marriages and Deaths

Notes, Short Comments, and Answers to Correspondents.

STUDENTS' NUMBER OF THE LANCET

INFORMATION intended for the Students' Number of THE LANCET must be sent WITHOUT DELAY, addressed to the Sub-Editor, and marked on the envelope "Students' Number Only"

"THE CAUSATION OF SEX"

To the Editor of THE LANCET

SIR,—In the book by Mr E R Dawson, reviewed in your columns on July 7th, there is no mention of the interesting work of R Robinson,[1] who found that adrenalised guinea-pigs gave birth to a preponderance of males, and cholinised animals to a preponderance of females He concluded that the sex of mammals is determined by the degree of activity of the mother s adrenals, hypoadrenalism giving female births, and hyperadrenalism male births He found that by a study of the reaction of Fränkel Allers (acid iodate of potassium) one can detect the presence of minimal quantities of adrenalin in the urine or blood of guinea pigs By this test, applied to the urine of four pregnant women he was able to forecast correctly the sex of their coming offspring If the woman's urine gives the reaction of adrenalin she will have a son, if not, a daughter In 1914 Bram took up the subject in 30 of his patients who wished to have a son[2] The treatment which he adopted successfully was ' the outcome of a combination and modification of the following two most plausible theories" of sex-determination —(1) that of Weill,[3] that sex depends on a contest between spermatozoon and ovum if the former be predominantly active the outcome is a male, and *vice versa* and (2) Robinson's theory Bram began treatment directly the period was missed kept it up till the fourth or fifth month, and then stopped it. If a boy was wanted, the patient was put on cereals fruits, potatoes, milk, butter milk, and butter, and plenty of water to drink She was forbidden eggs meat, fish, cheese After each meal a capsule was given containing 2 grs of adrenal extract and 4 grs. of lecithin, Bram believes that lecithin stimulates insufficient adrenals, and possibly also normal ones

Although there is room for much exact experimental study of this subject, yet there is something to say for Robinson's theory for any satisfactory theory of sex-determination must apply even far down in invertebrata We know by the work of Dr J F Gaskell[4] that the chromaffin system of the leech has a very marked action on its contractile vascular system But at the same time it seems unlikely that sex depends solely on the state of the mother's adrenals during pregnancy And we are still in the dark whether sex is determined soon after spermatozoon and ovum come to grips, or at a later period.

I am, Sir, yours faithfully,

London, N W., August 4th, 1917 LEONARD J KIDD

PLAGUE IN EGYPT DURING 1916

THE Department of Public Health of the Ministry of the Interior Egypt, has issued through the Government Press Cairo, a statistical summary of the cases of plague occurring in Egypt during the year 1916 and a comparison with the two previous years In 1914 181 cases were admitted to hospital, in 1915 188 cases and in 1916 1361 cases. The increased incidence began in December, 1915 and was at its maximum in April 1916, while by August the normal morbidity was reached again The percentage of deaths in hospital to admissions was 35 8 in 1916, against 38 8 in 1915 and 40·3 in 1914

HELPS TO FOOD ECONOMY

THE National Food Economy League, 3 Woodstock street Oxford street, London W, which is conducting an educational campaign throughout the country for the prevention of waste of the national food resources, has issued at the price of 6d a useful little pamphlet giving war time receipts for households where servants are employed Over 100 examples are given many of them being what may be called type receipts"—that is those which are applicable at discretion to other materials than those mentioned. As the book is intended for those who are able to afford the more expensive kinds of foods receipts are included which are economical in the sense that they save food rather than money For while the strictest economy of consumption should be exercised in all cases, everybody who can afford it should eat the more expensive kinds of food so as to leave the cheaper kinds for the poor Bread can be saved not only by using a smaller quantity but also by using substitutes This is a valuable cookery book in miniature, dealing with soups, stocks, fish, meat savouries, vegetables, sweets, sauces, and salads, with hints on breads and cakes which are of practical use at a time when there is urgent need of conserving our wheat supply.

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[1] Compt. Rend de l'Acad. des Sci., (a) 1911, cliii., p 1028 and (b) 1912, cliv., p 163.

[2] New York Med Journ., 19[illegible] xcix. p. 11[illegible]

[3] Monatsch. f Geburtsh. u Gynäk., xxxvi., December 1912.

[4] Phil Trans. Roy Soc. 1914 B ccv

HONEY

A LITTLE pamphlet on bees and honey by Mrs Grieve, of Chalfont St Peter, Bucks, gives the views of an expert, which will prove of interest not only to bee-keepers but to all gardeners and allotment-holders Notes on the natural history of bees are given, together with information as to the quality and quantity of honey that may be expected from bees feeding on particular flowers Honey as a food is discussed, with recipes for cake, bread, and sweets made from it

THE EMPLOYMENT OF WOMEN IN WAR TIME

THERE is no lack of employment for capable women at the present time Those who possess a training in one of many directions or are willing to undergo training can find immediate occupation if they know where to turn and to provide them with such information a useful book has been published entitled "Women's Work in War Time,"[1] enumerating the various posts open to women along with the qualifications required, the hours of work remuneration offered, and so on Among the occupations appealing to women of education are those of doctors, factory inspectors, health visitors infant protection visitors under the London County Council inspectors under the Local Government Board, creche matrons, dental mechanics, masseuses midwives, nurses organisers of care committees pharmacists sanitary inspectors, welfare superintendents, clerks, and secretaries A supplement contains a series of chapters from different pens describing in more detail the vocations enumerated in the first part

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[1] Women s Work in War Time A Handbook of Employments compiled and edited by H M. Usborne, with a Preface by Lord Northcliffe London T Werner Laurie Ltd 1917 Price 2s net.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE West London Hospital, Hammersmith-road, W

MONDAY —2 P.M. Medical and Surgical Clinics X Rays. Mr Gray: Operations Mr B Harman: Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics X Rays. Mr Baldwin Operations. Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet Diseases of the Skin.

WEDNESDAY —10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis Operations of the Throat, Nose, and Ear 2 P.M., Medical and Surgical Clinics. X Rays. Mr Pardoe Operations.

THURSDAY —2 P.M. Medical and Surgical Clinics. X Rays. Mr Gray Operations. Mr B. Harman: Diseases of the Eye.

FRIDAY —10 A.M. Dr Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M., Dr Saunders Diseases of Children Dr Banks Davis Operations of the Throat, Nose, and Ear Mr B Harman: Eye Operations. 2 P.M. Medical and Surgical Clinics X Rays. Mr Pardoe: Operations.

METEOROLOGICAL READINGS.

(*Taken daily at 8.30 a.m. by Steward's Instruments*)

THE LANCET Office August 15th 1917

Date.	Rain fall.	Solar Radio in Vacuo	Maximum Temp Shade	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks.
Aug 9	0·10	114	71	56	58	61	Cloudy
" 10	0·06	115	74	58	59	62	Cloudy
" 11	0·01	118	71	61	60	64	Cloudy
" 12	0·01	119	73	58	62	65	Cloudy
" 13	0·02	120	73	58	60	63	Cloudy
" 14	0·01	119	72	59	60	64	Cloudy
" 15	0·27	117	71	59	59	62	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

The following journals, magazines, &c. have been received:—Revue de Chirurgie Journal of Laryngology Rhinology and Otology Clinical Medicine, Canadian Medical Association Journal British Journal of Dermatology and Syphilis, Archives de Médecine et Pharmacie Navales, Revue de Médecine, Annales de l'Institut Pasteur American Journal of Roentgenology

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Offices 423, STRAND, LONDON W C 2

MANAGER'S NOTICES

VOLUMES AND CASES

VOLUMES for the first half of the year 1917 are now ready Bound in cloth, gilt lettered, *price 21s , carriage extra*

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To be obtained on application to the Manager, accompanied by remittance

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W C 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c , should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices

TO COLONIAL AND FOREIGN SUBSCRIBERS

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 49

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied

Communications, Letters, &c , have been received from—

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F—F T R *The Field* Lond. Ferrocarril de Antioquia Medellin Colombia Supt. Gen of

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Z—Dr S C Zavitzianos, Corfu.

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THE LANCET.

LONDON SATURDAY AUGUST 25, 1917

Students' Guide Session 1917–1918

THE ranks of the medical students are still sorely depleted, although, fortunately, not in the same measure as was the case a twelvemonth ago Many of the men who, in the ordinary course, would be entering upon a medical career are gaining in the bitter school of war an experience which cannot fail to stand them in good stead when they commence their studies, for there is no profession that requires more than medicine the qualities of self reliance and independent judgment But the same foresight which brought back the fourth and fifth year student from the trenches to complete his studies now ensures that those in earlier years shall remain at their work unless of first-class physique The increase of women students which was the novel feature of medical education in the last two years has now become an accepted commonplace when the proportion of women to men entering on medical studies is about as one to two The promise that a useful responsible, and successful career was offered to women in medicine has been perfectly clear for some time, and in the great organised movement to combat infantile mortality which is opening before us they will find more than sufficient scope for their special gifts But large as the number of women students actually is, there are doubtless many others who have been restrained from entering on their medical studies by the reluctance to give up the immediate patriotic work upon which they are engaged It is therefore to a public larger than last year, but still small, that the Students Number of THE LANCET is directed this year, and those who are pursuing their medical studies need no admonition to diligent and concentrated effort

In previous issues of this Guide we have been in the habit of giving a full account of the regulations for candidates desiring commissions in the Naval, Military, and Indian Medical Services with notes on rank pay, promotion, retirement allowances, and pensions All such information would now, however, be of passing interest The sections on Special *Training in Public Health* and in Tropical Medicine appear as usual Though the public health work of the country has been necessarily modified, the way in which our domestic and school hygiene has been guarded during the war remains most satisfactory An account is included of the Colonial Medical Service, whose activities have not been curtailed Dental education is dealt with as usual, although here, too, both students and facilities have suffered temporary curtailment

The General Council of Medical Education and Registration, conveniently known as the General Medical Council, is the controlling authority, under the Privy Council, of the medical education of the land Under the provisions of the Medical Acts various universities and corporations are recognised as being examining bodies whose degrees or diplomas entitle to medical registration and it is among the duties of the General Medical Council to keep the official register and to ensure by periodical visitations that the tests of the various examining bodies are maintained at a due standard During the past year the Council has reviewed the changes required to fit the course of medical studies to the exceptional times in which we live, and amongst other lesser changes has finally banished Latin from the list of compulsory subjects in the medical entrance examination We begin in the Students' Guide, which follows, by describing the powers of the General Medical Council, and go on to give in detail the regulations of the examining bodies

The systems under which the medical student obtains instruction do not conform to one pattern The curriculum falls into two parts, the preliminary subjects and the professional subjects, and the two cannot be sharply divided especially now when medicine is more than ever dependent on its handmaids of chemistry and physics The important preliminary subjects are chemistry pharmacology, physics, biology, anatomy, and physiology, and they are taught in the school proper, the professional subjects, medicine, surgery, and obstetric medicine —under which headings all forms of specialism are included—must be learned in the wards of a hospital All schemes of medical education require a school and a hospital, and end in the award to the student of a degree or diploma, but with this their uniformity ends

Information concerning the facilities for medical study, and the regulations for examinations at the various teaching centres, together with the names of the staffs[1] of the hospitals are so given that a student desiring to obtain a medical degree at any university will in general find under the same heading an account of the medical faculty of that university, and of the hospitals which form its field for clinical instruction. It is impossible to adhere rigidly to this plan without some cross reference, for, as is well known, the medical schools of some universities are served chiefly by hospitals in other centres Thus the majority of the medical students of Oxford and Cambridge pursue their clinical studies in London, and take the diplomas of the English Colleges, whilst any student who has gone through all his statutory training in a provincial centre may sit for a medical degree at the University of London The corporations which grant diplomas qualifying for the practice of medicine usually have no schools attached to them, but are content with examining students who have gone through the curriculum at any recognised metropolitan or provincial school

The Guide is divided into the three headings of England and Wales, Scotland, and Ireland, and the medical education in each country is dealt with as a separate entity The medical faculties of the universities in each country are first described, and then follows an account of the medical corporations having powers to grant diplomas by examination Under the heading of each university we give a general description of its arrangements for conferring medical degrees, of its facilities for preparing its students for those degrees, and particulars of those hospitals affording clinical instruction which are situated in the neighbourhood of the university buildings

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[1] A large majority of the staffs of the general hospitals serving with the Army as [illegible] officers or as consultants have military titles, but in a compendium of medical education we have considered it simpler to omit them

GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION OF THE UNITED KINGDOM

POWERS, DUTIES, AND CONSTITUTION OF THE GENERAL MEDICAL COUNCIL

THE powers and duties of the General Medical Council or "General Council of Medical Education and Registration of the United Kingdom" to give the Council its full title, have been set out in detail in many previous Students' Numbers of THE LANCET It is first a registering body no person, even though his qualifications have been *obtained*, *is a* legally qualified medical practitioner unless his name appears on the Medical Register Secondly, it is a standardising body, ensuring that the education of medical men is kept up to an efficient standard by scientific examination Thirdly, it is a penal and disciplinary body, having power to remove from the Register any practitioner adjudged guilty of conduct "infamous in a professional respect" Fourthly *to the* Council is committed the codification of pharmaceutical remedies

The duties of the Council are thus primarily of a public nature, and its construction shows its fitness for its fourfold responsibilities

The Council at present consists of 38 members, of whom, as will be seen by the annexed list, all but 11 are official representatives of some corporate body Five members *are chosen by the Crown on the advice of the Privy* Council, and six others are elected by the members of the medical profession as Direct Representatives

President of the General Council Sir Donald MacAlister, Members of the General Council Dr Norman Moore, chosen by the Royal College of Physicians of London, Mr Holburt Jacob Waring, Royal College of Surgeons of *England*, *Dr George Wilks, Apothecaries'* Society of London, Dr Arthur Thomson, University of Oxford, Sir T Clifford Allbutt, University of Cambridge, *Sir George Hare* Philipson University of Durham, Sir Frederick Taylor, University of London, Dr Grafton Elliot Smith, Victoria University of Manchester, Mr Harry Gilbert Barling University of Birmingham, Dr Richard Caton, *University of Liverpool*, Dr Alfred George Barrs, University of Leeds, Mr Rutherfoord John Pye Smith, University of Sheffield, Sir Isambard Owen, University of *Bristol, and Dr David Hepburn*, University of Wales Dr William Russell, chosen by the Royal College of Physicians of Edinburgh, Mr James William Beeman *Hodsdon Royal College of Surgeons of* Edinburgh, Dr David Neilson Knox, Royal Faculty of Physicians and Surgeons of Glasgow, Dr H Harvey Littlejohn University of Edinburgh, Sir Donald MacAlister, University of Glasgow, Dr John Theodore *Cash, University of* Aberdeen, and Dr John Yule Mackay, University of St Andrews Sir John William Moore, chosen by the Royal College *of Physicians* of Ireland, Sir Arthur Gerald Chance, Royal College of Surgeons in Ireland, Dr Edward Magennis Apothecaries' *Hall of* Ireland, Dr Arthur Francis Dixon, University of Dublin, Sir Bertram Coghill Alan Windle, National University of Ireland, and Dr Johnson Symington, Queen's University of Belfast Nominated by His Majesty, with the advice of his Privy Council Mr Charles Sissmore Tomes, Sir Arthur Newsholme, Sir Francis Henry Champneys Dr John Christie McVail, and Dr Edward Coey *Bigger* Elected as Direct Representatives Dr Langley Browne, Dr H A. Latimer, Dr J A MacDonald, *Mr Thomas* Jenner Verrall, Dr *Norman* Walker and Dr Leonard Kidd. Treasurers of the General Council Mr Charles Sissmore *Tomes* and Sir Frederick Taylor

THE EDUCATIONAL CURRICULUM[1]

Professional Education —The course of professional study after registration occupies at least five years The Final Examination in Medicine, Surgery, and *Midwifery* must not be passed before the close of the fifth academic year of medical study

Registration and Preliminary Examination of Medical Students —The following are the General Medical Council's Regulations in reference to the registration of students in medicine —

Every medical student should be registered in the manner prescribed by the General Medical Council The registration of medical *students* is placed under the charge of the Branch Registrars Every person desirous of being registered as a medical student should apply to the Branch Registrar of the division of the United Kingdom in which he is residing, and should produce or *forward to the Branch* Registrar a certificate of his having passed a preliminary examination as required *by the General Medical* Council, and evidence that he has attained the age of 16 years, and has commenced medical study at an institution approved by the Council. The Branch Registrar shall enter the applicant's name and other particulars in the Students Register and shall give him a certificate of such registration Each of the Branch Registrars shall supply to the several licensing bodies, medical *schools, and hospitals, in that part of the* United Kingdom of which he is registrar, a sufficient number of blank forms of application for the registration of medical students The commencement of the course of professional study recognised by any of the qualifying bodies should not be reckoned as dating earlier than 15 days before the date of registration In addition to the universities and schools of medicine there are many institutions where medical study may be commenced Applications for *special exceptions* are dealt with by the Students Registration Committee, which reports all such cases to the Council

Regulations for the Maintenance of the Register of Medical Students

The following examinations have been approved by the Council —(*a*) The final examinations for the degrees in Arts and Science of any University of the United Kingdom or of the British Dominions (*b*) All examinations which are accepted for Matriculation in the Faculties of Arts and Science in any University of *Great* Britain, provided the pass certificate includes English, Mathematics, and at least two *other subjects* named in the following list —Latin Greek Arabic, Persian, French, German, Spanish, Italian, Russian, or any approved modern language, History, Geography Natural Philosophy or Physics, Chemistry Biology, Physical Geography and Geology (*c*) All examinations not included under the foregoing section (*b*), which are accepted for Matriculation in the Faculty of Medicine in any University of the United Kingdom of Great Britain and Ireland provided the examination is completed at not more than two *periods* of examination, *and that the* pass-certificate includes English with Geography and History, Mathematics Latin, and at least one other subject named *in the* following list —Greek Arabic Persian, French, German Spanish, Italian Russian (*d*) The Council may grant special recognition to the following examinations not included under the foregoing sections (*a*) (*b*), and (*c*) —(1) The final examina*tions for the degrees in Arts* and Science of any specially recognised Foreign University (2) Examinations conducted by approved Examining *Bodies* within the United Kingdom under the provisions set forth in the foregoing section (*c*). (3) Examinations conducted by approved Examining Bodies out of the United Kingdom under the provisions set forth in the foregoing section (*c*), and under such other conditions as the Council may impose in each case

List of Bodies whose Examinations are accepted under the Foregoing Regulations

I *Examinations in Great Britain*

(1) The Matriculation Examinations in the Faculties of Arts of Science of and all examinations accepted in lieu thereof by, the following Universities Oxford (including Responsions and Moderations) Cambridge (including the Previous Examination and the General Examination), Durham, London, Manchester Birmingham *Liverpool* Leeds, Sheffield, Bristol Wales, Edinburgh, Glasgow Aberdeen, St Andrews These examinations are *accepted subject to the conditions* set forth under *Section* 2 (*b*) above (2) The Preliminary Examinations in the Faculty of Medicine of and *all examinations* accepted in lieu thereof by the Universities of Durham, Edinburgh Glasgow Aberdeen St Andrews *These* examinations are accepted subject to the conditions of Section 2 (*c*) above (3) Specially recognised Examinations conducted by approved *bodies*

The examinations named below conducted by approved bodies in so far as they are not included in any of *the foregoing* sections, are specially recognised by the Council under Section 2 (*d*) (2) —University *of* Oxford Senior *Local* Examinations ; Higher Local Examinations. University of Cambridge : Senior Local *Examinations* ; *Higher Local* Examinations Oxford and Cambridge Schools Examination Board

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[1] A special leaflet showing the Council s requirements will be sent on application

Higher Certificate Examination[2] the School (or Leaving) Certificate Examination University of London: Senior School Examination Universities of Manchester Liverpool Leeds Birmingham and Sheffield Senior School Certificate (to include (*a*) English Language and Literature (*b*) Latin (c) Mathematics (*d*) Greek or a Modern Language and (*e*) and (*f*) any two other subjects as set out in the Regulations of the Board) School Certificate Higher Certificate University of Bristol: School Senior General Examination University of St. Andrews Final Examination for Diploma of L.L.A. Scotch Education Department Leaving Certificate Examinations passes in Lower Grade Leaving Certificate Examinations Intermediate Certificate Central Welsh Board: Senior Certificate Examinations College of Preceptors Examinations for the Senior Certificate Preliminary Examination for Medical Students Educational Institute of Scotland; Preliminary Medical Examination The examinations included in this list which do not fall within the groups accepted by the Universities in lieu of their Matriculation Examination in Arts or Science are recognised by the Council subject to the conditions set forth in Section 2 (*c*) above

II *Irish Examinations*

University of Dublin: Matriculation Examination: (*a*) Junior Freshman Term Examination (exclusive of Trigonometry) (*b*) Special Preliminary Examination to be held in March the standard and subjects of which shall be those of a Junior Freshman Examination (exclusive of Trigonometry) (c) Junior Exhibition Examination on obtaining marks of sufficient merit in the subjects of (*a*) or (*b*) (*d*) Examinations for the First, Second Third or Fourth Year in Arts (Certificate to be signed in the approved form by the Medical Registrar of the University) Queen s University of Belfast: Matriculation Examination National University of Ireland: *Matriculation Examination* Intermediate Education Board of Ireland Middle Grade Examination with Honours in three subjects Senior Grade Examination Royal Colleges of Physicians and Surgeons in Ireland: Preliminary Examination These Examinations are accepted subject to the conditions set forth in Section 2 (c) above

Further particulars are given in the Students' Regulations, which can be obtained at the offices of the Council, price 6*d*

The remainder of the curriculum, though all under the supervision of the Council, is in detail in the hands of the various degree and diploma granting bodies whose representatives are members of the General Medical Council In the next pages we give the regulations of the various examining bodies, but it must always be remembered that the examinations are under the supervision of the General Medical Council, who visit the various centres in turn and closely inspect the *procedure*

These examinations are accepted subject to the conditions set forth in Section 2 (*c*) above

Indian, Colonial, and Foreign Universities and Colleges

Every Certificate from Indian, Colonial, and Foreign Universities and Colleges must contain evidence that the Examination has been conducted by or under the authority of the Body granting it, must include all the subjects required by the General Medical Council, and must state that all the subjects of Examination have been passed in at not more than two examinations, copies of the form of the required Certificate are supplied by the Registrar of the Council for the purpose In the case of Natives of India or other Oriental countries whose vernacular is other than English an Examination in a Classical Oriental Language (e g, Sanskrit Arabic, Chinese) may be accepted instead of an Examination in Latin The German Abiturienten Examen of the Gymnasia and Real Schulen and the examinations entitling to the French diplomas of Bachelier ès Lettres and Bachelier ès Sciences and other corresponding Entrance Examinations to the Universities in Europe are recognised by the General Medical Council

The Officers of the Council

Norman C King Registrar of the General Council and of the Branch Council for England, 44, Hallam street, Portland place W —James Robertson, Registrar of the Branch Council for Scotland, 54, George square Edinburgh —Richard J E Roe Registrar of the Branch Council for Ireland 35 Dawson street, Dublin All communications should be addressed to 'The Registrar" and not by name

POSTPONEMENT OF THE ELECTION OF DIRECT REPRESENTATIVES

By an Order in Council dated August 10th the provisions of the Parliament and Local Elections Act, 1917 have been extended to the election of members of this Council by registered practitioners resident in the United Kingdom, the effect of which is to extend the term of office of the existing Direct Representatives until Dec. 31st 1918 Accordingly no election of Direct Representatives will fall to be held in the present year

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For particulars see Regulations issued by the Board.

THE
MEDICAL EXAMINING BODIES
AND
SCHOOLS OF THE UNITED KINGDOM

A GUIDE TO THE FACILITIES FOR OBTAINING THE VARIOUS MEDICAL DEGREES AND OTHER QUALIFICATIONS FOR THE BRITISH MEDICAL REGISTER

I —ENGLAND AND WALES
THE UNIVERSITIES

UNIVERSITY OF OXFORD

THERE are two degrees in Medicine, *B M and D M*, two degrees in Surgery, *B Ch and M Ch*, and two diplomas, *Public Health* and *Ophthalmology*

Graduates in Arts (B A. or M A) are alone eligible for the degrees The most convenient course for the B A degree for intending graduates in Medicine is to take Responsions, the Preliminary Science Examinations mentioned below, and the Final Honour School of Physiology In order to obtain the degrees of B M and B Ch the following examinations must be passed —1 Preliminary subjects Mechanics and Physics, Chemistry, Animal Morphology, and Botany 2 Professional (*a*) First Examination Subjects—Organic Chemistry, unless the candidate has obtained a first or second class in Chemistry in the Natural Science School, Human Physiology, unless he has obtained a first or second class in Animal Physiology in the Natural Science School, Human Anatomy (*b*) Second Examination Subjects—Medicine, Surgery, Midwifery, Pathology, Forensic Medicine with Hygiene, Materia Medica and Pharmacology The approximate dates of the examinations are as follows —Preliminaries—Mechanics, Physics, and Chemistry, December and June, Animal Morphology, December and March, Botany, March and June, Professional (First and Second B M), June and December

The First Examination for the degrees of B M and B Ch may be passed as soon as the Preliminary Scientific Examinations have been completed Anatomy and Physiology are to be passed together, and Organic Chemistry may be taken before or after these have been passed

The Second Examination may be passed after the completion of the first, but Pathology, Hygiene, and Materia Medica and Pharmacology may be taken before or with the remaining subjects Before admission to the Second Examination candidates must present certificates of attendance on a course of laboratory instruction in Practical Pathology and Bacteriology and of having acted as post-mortem clerk for three months, surgical dresser for six months, and clinical clerk for six months Also they must produce certificates of instruction in Infectious and Mental Diseases, and of attendance on Labours, of proficiency in the practice of Vaccination and Anæsthetics and of having attended a course of Practical Pharmacology Also in respect of the First Examination candidates must present certificates showing that they have dissected the whole body once and have attended courses of laboratory instruction in Practical Histology and Practical Physiology

The degree of D M is granted to Bachelors of Medicine of the University provided they have entered their thirty ninth term and have composed on some *medical* subject a dissertation which is approved by the professors in the Faculty of Medicine and examiners for the degree of B M whose subject is dealt with A book published within two years of the candidate s application for the degree may be substituted for a dissertation The Regius Professor may direct the dissertation to be read in public The degree of M Ch. is granted to Bachelors of Surgery of the University who have entered their twenty seventh term, who are members of the surgical staff of a recognised hospital, or have acted as Dresser or House Surgeon in such a hospital for six months, and who have passed the M Ch examination in Surgery, Surgical Anatomy, and Surgical Operations This examination is held annually, in June at the end of the Second B M Examination

Diploma in Ophthalmology —There is an examination once in each year in the Theory and Practice of Ophthalmology for the purpose of granting certificates of proficiency therein styled Diplomas in Ophthalmology The examination is under the supervision of the Board of the Faculty of Medicine, which has power to make regulations as to the subjects of the examination, the time at which the examination is held, and the conditions of admission No candidate is admitted to the examination for the diploma who has not pursued at Oxford a course of study in Ophthalmology approved by the Board of the Faculty of Medicine, and extending over a period of at least three months The fee for admission to the examination is £15, unless the candidate is a graduate of the University, in which case it is £10 only

Travelling Fellowship, Scholarships and Prizes — A Radcliffe Travelling Fellowship is awarded annually after an examination held in February It is tenable for three years and is of the annual value of £200 The examination is in Physiology, Pathology, and Hygiene, and is partly "practical" Candidates must be graduates in Medicine of the University The holder must travel abroad for the purpose of medical study Application should be made to the Radcliffe Examiners, Radcliffe Library, University Museum A Rolleston Memorial Prize is awarded once in two years to members of the Universities of Oxford and Cambridge of not more than ten years' standing for an original research in some Biological subject, including Physiology or Pathology The Radcliffe Prize, founded by University College (1907), is of the value of £50 and is awarded biennially for research in some branch of medical science The Theodore Williams Scholarships of the value of £50 each are awarded annually in the subjects of Anatomy, Physiology, and Pathology A King's College Hospital Burney Yeo Scholarship of £80 is awarded each year The Scholarships in Science which are offered by several Colleges are open to those who intend to pursue Medicine The value of these scholarships is usually £80 a year for four years

More detailed information may be obtained from the University Calendar, from the Examination Statutes, 1915, from the *Student's Handbook to the University* (all of which are published by the Clarendon Press), from the Regius Professor of Medicine, and from the Professors in the several departments of medical science Certain special conditions as regards students who have served for two years with the British Expeditionary Force may be obtained on application to the Registrar of the University, Clarendon Building

Professors — Botany (Sherard) S H Vines, M A. Chemistry (Waynflete) W H Perkin, D Sc Comparative Anatomy (Linacre) G C Bourne, D Sc Human Anatomy A. Thomson, M A Lecturer in Applied Anatomy A P Dodds Parker, B M Medicine (Regius) Sir W Osler, Bart, D M Litchfield Lecturer W Tyrrell Brooks, M B Surgery, Litchfield Lecturer E O Bevers, B M Natural Philosophy (Sedleian) A E H Love, D Sc Physics (Wykeham) J S E Townsend, M A Physiology (Waynflete) C S Sherrington, M D Zoology E B Poulton, D Sc Pathology G Dreyer M D Lecturer E W A Walker, D M Morbid Anatomy A G Gibson, D M Pharmacology (Reader) James Gunn, M D

In addition to the University lectures and classes the several *Colleges provide their undergraduates* with tuition for all *examinations* up to the B A. degree

In the Radcliffe Infirmary and County Hospital clinical instruction is given by the Regius Professor of Medicine, the Litchfield Lecturers in Medicine and Surgery, *and the other* physicians and surgeons Instruction is also given in post-mortem work and Clinical Pathology in connexion with the courses in Pathology

UNIVERSITY OF OXFORD RADCLIFFE INFIRMARY AND COUNTY HOSPITAL —Courses of instruction are given in connexion with the Oxford University Medical School These include (1) a course in Practical Medicine by the Regius Professor of Medicine, (2) Clinical lectures by the *Litchfield* Lecturers in Medicine and Surgery, and (3) tutorial instruction and *demonstrations in special* Regional Anatomy (medical and surgical), methods of Medical and Surgical Diagnosis, and Surgical Manipulation (4) Pathological demonstrations and instruction in post mortem work are given by the Assistant Pathologist Practical Pharmacy is taught in the Radcliffe Dispensary Opportunities are offered to students who wish to act as surgical dressers and clerks The Hospital contains 170 beds Honorary Surgeon Mr H P Symonds *Active Consulting* Physician Professor Sir William Osler, Bart Active Staff —*Honorary* Physicians Dr W Tyrrell Brooks, Dr W Collier, and Dr F Mallam Honorary Assistant Physician and Medical Registrar Dr A Waters Electro-Therapeutic Physician Dr W J Turrell *Honorary Surgeons* Mr R H A Whitelocke, Mr A P Dodds Parker, and Mr E O Bevers Honorary Assistant Surgeon and Surgical Registrar (Vacant) Consulting Ophthalmic Surgeon Mr P E H Adams Honorary Consulting Pathologist Professor Georges Dreyer Honorary Assistant Pathologist Dr A G Gibson Consulting Dental Surgeon Mr E A. Bevers Honorary Radiographer Mr R H Sankey House Physician *(Vacant) House Surgeon Mr W G Bendle Casualty* House Surgeon (Vacant)

UNIVERSITY OF CAMBRIDGE

The student must enter at one of the Colleges, or as a non collegiate student, and keep nine terms (three years) by residence in the University He must pass the *Previous Examination* in *Classics*, Mathematics &c., if possible, before he comes into residence in October, or he may obtain exemption through the Oxford and Cambridge Schools Examination Board, the Oxford or Cambridge Senior Local Examinations, the London *Matriculation Examination*, the *Scotch Education* Department, Responsions at Oxford, and the Joint Matriculation Board of the Universities of Manchester, Liverpool, Leeds, and Sheffield, the Matriculation Examination of the University of Birmingham, or by being graduates of certain other Universities in the United Kingdom He may then devote himself to medical study in the University, dissecting, attending the hospital and the medical lectures, &c. Or he may, as nearly all students now do, proceed to take a degree in Arts by passing either (*a*) the General Examination and one Special Examination or (*b*) two Special Examinations for *the ordinary* B A *degree, or going out* in one of the Honour Triposes The Natural Sciences Tripos is taken most frequently, *as some of the subjects* are practically the same as those for the first and second M B

For the degree of *Bachelor of Medicine* (*M B*) five years of medical study are required either in Cambridge or at one of the recognised Schools of Medicine. The first *three or four years are usually spent* in Cambridge, the student remaining in the University till he has passed, say, the examination for Part I of the Natural Sciences Tripos and the first and second examinations for M B Hospital practice and many of the requisite lectures may be *attended in Cambridge, and a* certain number of students remain to attend lectures and hospital practice until they have passed the second part of the second examination for M B The laboratories for Botany, Chemistry Physics Biology, Zoology, Human Anatomy, Physiology Biochemistry, Pathology, Bacteriology, Pharmacology, Psychology, and Public Health are well equipped. *Addenbrooke's* Hospital, the Infectious Diseases Hospital the Cambridge Research Hospital, and the Field Laboratories are utilised for study and research

There are three examinations for M B The *first* includes (1) Chemistry and other branches of Physics, and (2) Elementary Biology These parts may be taken together or separately The *second* is divided into two parts—viz, (1) Human Anatomy and Physiology, and (2) Pharmacology and General Pathology The *third* is also divided into *two* parts (1) *Principles* and Practice of Surgery (including Special Pathology and Midwifery and Diseases Peculiar to Women), and (2) Principles and Practice of Physic (including Diseases of Children, Mental Diseases, Medical Jurisprudence) Pathology (including Hygiene and Preventive Medicine), and Pharmacology (including Therapeutics and Toxicology) The examinations are partly in writing, partly oral, and partly practical *in the hospital*, in the dissecting *room*, and in the laboratories An Act has then to be kept in the Public Schools, by the candidate reading an original dissertation composed by himself and being examined orally on *some* subject approved by the Regius Professor of Physic

Candidates who have passed both parts of the third M B examination are admitted to the registrable degree of *Bachelor of Surgery* (*B Ch*) without separate examination and without keeping an Act

The degree of *Doctor of Medicine* (*M D*) may be taken three years after that of M B or four years after that of

M A. The candidate is required to produce certificates of having been engaged in Medical Study for five years, and if an M A. some certificates of attendance on Lectures, and of attendance on Hospital Practice, and to pass the same examinations as are required for the degree of M B An Act has to be kept, consisting of an original Thesis sustained in the Public Schools with *viva voce* examination, and a short extempore essay has to be written on a topic taken from the general subject of his thesis, whether it be Physiology, Pathology, Pharmacology the *Practice* of Medicine, State Medicine, or the History of Medicine

For the degree of *Master of Surgery* (*M. Ch*) the candidate must have passed all the examinations for B C , or, if he is an M A., have obtained some other registrable qualification in surgery He is required either (1) to pass an examination in Principles and Practice of Surgery, Surgical Anatomy and Surgical Operations, and Pathology, and to write an extempore essay on a Surgical Subject, or (2) to submit to the Medical Board original contributions to the advancement of the Science or Art of Surgery Before he can be admitted to the examination two years at least must have elapsed from the time when he completed all required for the degree of B C Before submitting original contributions he must have been qualified at least three years

An abstract of the Regulations and Schedules of the range of the examinations in Chemistry, Physics Biology, Pharmacology, and General Pathology may be obtained upon sending a stamped directed envelope to the Registrary, the Registry, Cambridge

The Professors, Readers, and Lecturers in the various subjects are as follows Professors—Anatomy A. Macalister, M D Biology (Quick) G H F Nuttall, Sc.D Botany A C Seward M A Chemistry W J Pope, M A. Natural Philosophy (Jacksonian) Sir James Dewar, M.A. Pathology G Sims Woodhead, M A. Physic (Regius) Sir T Clifford Allbutt, M D Physiology J N Langley, Sc.D Surgery (Vacant) Therapeutics (Downing Professor of Medicine) J B Bradbury, M D Zoology, &c. J Stanley Gardiner, M A. Readers—Botany F F Blackman, M.A Chemical Physiology F G Hopkins, M A. Zoology A. E Shipley, Sc.D Lecturers—Bacteriology Louis Cobbett, M D Hygiene G S Graham Smith, M D Botany A. G Tansley, M.A., and R P Gregory, M A Chemistry H. J H Fenton, Sc D Organic Chemistry S Ruhemann, M.A. Chemistry and Physics as Applied to Hygiene J E Purvis, M A. Advanced Morphology of Vertebrates H Gadow, M A. Pathology (Huddersfield) T S P Strangeways M.A. Physics G F C Searle, Sc.D , and C T R Wilson, M A Pharmacology W E Dixon, M A Advanced Physiology L E Shore M D Physiology W B Hardy, M A. Neurology H K Anderson, M D Physiology of the Senses W H R. Rivers, M A. Experimental Psychology C S Myers, M D , Sc D Physical Anthropology W L H Duckworth M D , Sc.D

Women Students —Increased facilities have been offered to students of Girton and Newnham Colleges and they are admitted to the Final and Second M B Examinations under certain conditions

University Prize in Medicine —The one University Prize in Medicine the Raymond Horton Smith Prize (value £19) is awarded to that candidate for the degree of M D who presents the best thesis for the degree during the academical year, provided that he has taken honours in a tripos examination Medical Studies are endowed by the numerous Natural Science scholarships at the various colleges, information about which can be obtained from the respective Tutors

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ADDENBROOKE S HOSPITAL —Clinical Lectures in Medicine and Surgery, in connexion with Cambridge University Medical School, are given at this hospital twice a week during the academical year, and practical instruction in Medicine and Surgery is given in the wards and out-patients rooms by the physicians and surgeons daily during the term time and vacations The fee for pupilship is 3 guineas a term Physicians Professor Sir Clifford Allbutt Professor Bradbury Dr L. Humphry Dr Lloyd Jones and Dr Aldren Wright Surgeons Mr G E Wherry, Mr F Deighton, Dr Griffiths and Mr Arthur Cooke All communications by students should be made to Dr Aldren Wright

UNIVERSITY OF LONDON

The University of London was established by Royal Charter in 1836 as an examining and degree conferring body with affiliated colleges but no direct teaching functions In 1900 it was reconstituted under the Act of Parliament 1898 and became a *teaching* as well as an examining body Many schools already existing became constituent colleges, including all the metropolitan medical schools Teachers were also appointed in special subjects to give lectures at the University

Teaching Staff —The teaching staff of the University is organised under two heads 1 Appointed teachers—i e , such as are appointed by, and are paid out of the funds of, the University 2 Recognised teachers—i.e , those who have been appointed and are paid by the several schools of the University and other institutions at which instruction is given under the auspices of the University, and who have been recognised by the Senate as conducting work of University standard Courses by non recognised teachers may also be approved in schools of the University The lecturers in the Medical Sciences and the professors in the Faculties of Medicine in University College, London, and King s College, London, will be found enumerated under their respective medical schools

Internal and External Students —All the examinations of this University are open to men and women alike Matriculated students of the University may be either internal or external Internal students of the University are students who have matriculated at the University and who are pursuing a course of study approved by the University, either (*a*) under the direct control of the University or a committee appointed thereby, or (*b*) under one or more of the appointed or recognised teachers of the University Centres for preliminary and intermediate medical studies have been established by the University at University and King s Colleges Internal students must pursue their studies at one of the above centres or at one of the medical schools connected with the University These are St Bartholomew's Hospital, Charing Cross Hospital St George's Hospital, Guy's Hospital, King s College Hospital, the London Hospital, St Mary's Hospital, the Middlesex Hospital, St Thomas's Hospital, University College Hospital, Westminster Hospital and the London (Royal Free Hospital) School of Medicine for Women The London School of Tropical Medicine and the Lister Institute of Preventive Medicine are also recognised as schools of the University in special departments External students are all other matriculated students, and may pursue their studies at other universities and medical schools presenting themselves for examination at the University of London

Faculty of Medicine —The Faculty of Medicine grants the joint degrees of M B , B S (*Bachelor of Medicine and Surgery*), and the higher separate degrees of M D (*Doctor of Medicine*) and M.S (*Master of Surgery*)

The curriculum for the medical degrees is now five and a half years from the time of matriculation, except in the case of students who have passed the Preliminary Scientific Examination or the First Examination for Medical Degrees before July, 1910 and the examinations formerly known as the Preliminary Scientific, the *Intermediate*, and the Final Examination in Medicine are now respectively entitled the First Second, and Third Examinations for Medical Degrees Part II. of the former Preliminary Scientific Examination has now been made Part I. of the Second Examination

A. *Internal Students* —In order to be admitted to the Bachelor s degrees a student must [illegible] after registration as an internal student, have [illegible] attended [illegible] prescribed courses of study for five and a [illegible] more schools of the University (2) [illegible] ing examinations, under the conditions [illegible] (*a*) The First Examination for Medical Degrees [illegible] Chemistry Physics and General Biology [illegible] mination for Medical Degrees Part I [illegible] Chemistry, Part II Anatomy, Physiology [illegible] cology, including Pharmacy and Materia Medica [illegible] Third Examination for Medical Degrees [illegible] Examination in Medicine including [illegible] Mental Diseases Surgery Midwifery [illegible] Women, Pathology Forensic Medicine and [illegible]

B *External Students* —To be admitted to [illegible] degrees an external student must (1) have [illegible] culation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously, (2) have passed subsequent examinations similar to those required of an internal student, and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Professional Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more of the recognised institutions or schools in the United Kingdom

The First Examination for Medical Degrees (*Inorganic Chemistry, Physics, and General Biology*) will take place twice in each year, commencing on the Monday following Dec 10th and on the second Monday in July It must as a rule be passed by internal students not less than one academic year after matriculation and by external students not less than nine months after matriculation

The Second Examination for Medical Degrees (Part I) Organic Chemistry —This examination will take place twice in each year, commencing on the Thursdays following the third Monday in March and the second Monday in July No candidate will be admitted to this examination within six months of having passed the First Examination [During the continuance of the war only this examination will be held in December as well as in March and July]

The Second Examination for Medical Degrees (*Part II*) takes place twice in every year, commencing on the third Monday in March and on the first Monday in July The subjects of the examination are Human Anatomy and Embryology, Physiology, and Pharmacology, including Pharmacy and Materia Medica No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I of the Second Examination for Medical Degrees

The Third or M B , B S Examination —The M B , B S examination takes place twice in each year, commencing on the fourth Monday in October and on the first Monday in May No candidate except those who pass the Preliminary Science or First Examination for Medical Degrees before July will be admitted to this examination within three academic years from the date of passing in Anatomy and Physiology at the Second Examination (Part II), nor unless he has completed that examination together with prescribed courses of study or practice summarised below (1) Principles and Practice of Medicine, (2) Clinical Methods and Physical Diagnosis, (3) Insanity (with clinical demonstrations at a recognised Asylum), (4) Therapeutics, (5) Vaccination, (6) Principles and Practice of Surgery, (7) Operative Surgery, Surgical Anatomy, Practical Surgery, and the Administration of Anæsthetics, (8) Diseases of the Eye Ear, and Throat, (9) Lectures and Demonstrations on Midwifery and Diseases of Women, (10) Practical Midwifery, the conduct of at least 20 Labours, and practice as a Clinical clerk in Gynæcological work, (11) Pathology and Bacteriology, (12) work of the Post-mortem room, (13) Forensic Medicine, and (14) Hygiene He must also have attended the Medical and Surgical practice of a recognised hospital for two years and a course of instruction at a recognised Fever Hospital for two months [1] He must have had clinical instruction and must have held the posts of medical clinical clerk and surgical dresser for periods of six months each Candidates will be examined in Medicine (including Therapeutics and Mental Diseases), Pathology, Forensic Medicine and Hygiene, Surgery, Midwifery, and Diseases of Women The subjects may be divided into two groups—namely (1) Medicine, Pathology, Forensic Medicine, and Hygiene, and (2) Surgery, Midwifery, and Diseases of Women These groups may be taken either separately or together The list of candidates who have passed will be published in two parts—namely, an Honours list and a Pass list. Bachelors of Medicine of this University who graduated in or before May, 1904, may obtain the B S degree by passing the Surgical part of the M B , B S examination.

Doctor of Medicine —The examination for this degree takes place twice in each year, commencing on the first Monday in December and on the first Monday in July Candidates may present themselves for examination in one of the following branches, namely (1) Medicine, (2) Pathology, (3) Mental Diseases, (4) Midwifery and Diseases of Women, (5) State Medicine, and (6) Tropical Medicine. Any candidate for the degree of M D may transmit to the Registrar a thesis or published work having definite relation to the branch of Medicine in which he is a candidate, and if the thesis be approved by the examiners the candidate may be exempted from the written examination in that subject

Master in Surgery —The examination for the degree of Master in Surgery takes place twice in each year and commences on the first Monday in December and on the first Monday in July

Fees —Matriculation £2, which will be returned if the candidate withdraws his name before the last day of entry Should he fail to present himself an additional £1 will be charged on subsequent presentation within eight months £2 will be charged on each subsequent entry At provincial examinations an additional fee of £1 to £3 is charged by the local authorities at the time of examination. First M B B S Examination £5 for each entry to the entire examination, or £2 each subject if the examination is taken in parts Second M B , B S Examination Part I £2, repeated on each subsequent entry, Part II £8 for the whole examination For re examination in one subject £4 Third (Final) M B , B S Examination £10 for each entry to the whole examination and £5 for examination or re-examination in each group M D Examination £20, for re examination £10 M S Examination As for M D

Full details of the prescribed curricula of study and the names of the recognised Internal and External Schools of the University, can be obtained free on application to the Academic Registrar, University of London, South Kensington S W

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON [1]

ST BARTHOLOMEW S HOSPITAL AND COLLEGE.—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 for convalescent patients at Swanley It receives over 8000 in patients annually and its out-patients and casualties amount to more than 78,000 annually Special departments have been organised for Diseases of Women and Children, the Eye, Ear, Larynx, and Skin, as well as for Orthopædic and Dental Surgery, and for Electro therapeutics and X Ray work Surgical operations take place every day at 1 30 P M and Surgical Consultations are held on Thursdays at the same hour Medical Consultations are held on Thursdays at 3 15 P M The physicians and surgeons deliver clinical lectures weekly during both the winter and the summer sessions Clinical Lectures on all special subjects are also given The visits of the physicians and surgeons are made at 1 30

Ten house physicians and ten house surgeons are appointed annually and are provided with rooms by the hospital authorities and receive £80 a year as salary A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear are appointed every six months, and are provided with rooms and receive a salary of £80 a year Three resident anæsthetists are appointed annually, and receive salaries of £120, £100, and £100 respectively, with rooms An extern midwifery assistant is appointed every three months and receives a salary of £80 a year The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in patients and to the out-patients and the dressers in the special departments are chosen from the students A residential college is attached to the hospital

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[1] During the continuance of the war students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology, but who have completed one year's study after passing the First Examination for Medical Degrees will be allowed to count not more than six months service as clinical clerk or not more than six months service as surgical dresser in a recognised hospital as if they had so passed the examination in question Clinical service during the continuance of the war for any period of not more than twelve months in a medical Unit of the Regular or Territorial Forces, or in a hospital or detachment of the Red Cross Society or in any hospital recognised by the military or naval authorities for war purposes, will be accepted by the University as equivalent to the medical and surgical practice in a recognised hospital for an equal period and further any portion or the whole of the time so spent will be accepted as equivalent to time spent either as a clinical-clerk or as a dresser at the choice of the candidate Clinical service during the continuance of the war as set forth above will be similarly accepted for a period not exceeding six months from students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology but who have completed one year of study after passing the First Examination for Medical Degrees as if they had so passed the examination in question

[1] For Ancillary Metropolitan Medical Schools see p 293

New Buildings —The new buildings comprise residential quarters for the resident staff, casualty, medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre A new chemical laboratory has been added to the Medical School and a laboratory devoted to instruction in Public Health A second new block is devoted to Pathology, and contains the post-mortem room as well as extensive laboratories for bacteriology clinical pathology pathological histology, and pathological chemistry *The Medical School Buildings* include three large lecture theatres a large dissecting room, a spacious library (containing 13,000 volumes), a well-appointed museum of anatomy, physiology, comparative anatomy materia medica, botany, and pathological anatomy The pathological museum is the most complete in the kingdom There are laboratories for chemistry, physiology, pharmacology, physics, public health, and biology, giving ample accommodation in every department.

Special Classes for the Primary and Final F R C S are held twice yearly *Instruction in Preliminary Science* is given to University of London students in chemistry, biology, and physics throughout the year *Laboratory Instruction for the D P H* is provided during the winter and summer sessions

The recreation ground of 10 acres is at, Winchmore Hill for the use of the members of the Students Union, which all students are expected to join The Students' Union contains a large reading and smoking room, a committee and writing room, luncheon and dining hall, and a miniature rifle range

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Fees —An entrance fee of 10 guineas and 8 guineas is payable by full course and final course students respectively, culation examination or have been exempted therefrom under Statute 116 not less than five and a half years previously, (2) have passed subsequent examinations similar to those required of an internal student, and (3) have been engaged in professional studies during the five and a half years subsequently to Matriculation and four and a half years subsequently to passing the First Examination for Professional Degrees at one or more of the medical institutions or schools recognised by this University for the purpose, one year at least of the four and a half years to have been spent in one or more of the recognised institutions or schools in the United Kingdom

The First Examination for Medical Degrees (*Inorganic Chemistry, Physics, and General Biology*) will take place twice in each year, commencing on the Monday following Dec 10th and on the second Monday in July *It must* as a rule be passed by internal students not less than one academic year after matriculation and by external students not less than nine months after matriculation

The Second Examination for Medical Degrees (Part I) Organic Chemistry —This examination will take place twice in each year, commencing on the Thursdays following the *third Monday in March* and the second Monday in July No candidate will be admitted to this examination within six months of having passed the First Examination [During the continuance of the war only this examination will be held in December as well as in March and July]

The Second Examination for Medical Degrees (*Part II*) takes place twice in every year, commencing on the third Monday in March and on the first Monday in July The subjects of the examination are Human Anatomy and Embryology, Physiology, and Pharmacology, including Pharmacy and Materia Medica No candidate shall be admitted to the examination unless he has passed the First Examination for Medical Degrees at least 18 months previously, and has passed Part I of the Second Examination for Medical Degrees

The Third or M B , B S Examination —The M B , B S examination takes place twice in each year, commencing on the fourth Monday in October and on the first Monday in May No candidate except those who pass the Preliminary Science or First Examination for Medical Degrees before July will be admitted to this examination within three academic years from the date of passing in Anatomy and Physiology at the Second Examination (Part II), nor unless he has completed that examination together with prescribed courses of study or practice summarised below (1) Principles and Practice of Medicine, (2) Clinical Methods and Physical Diagnosis, (3) Insanity (with clinical demonstrations at a recognised Asylum), (4) Therapeutics, (5) Vaccination, (6) Principles and Practice of Surgery, (7) Operative Surgery, Surgical Anatomy, Practical Surgery, and the Administration of Anæsthetics, (8) Diseases of the Eye Ear, and Throat, (9) Lectures and Demonstrations on Midwifery and Diseases of Women, (10) Practical Midwifery, the conduct of at least 20 Labours, and practice as a Clinical clerk in Gynæcological work, (11) Pathology and Bacteriology, (12) work of the Post-mortem room, (13) Forensic Medicine, and (14) Hygiene He must also have attended the Medical and Surgical practice of a recognised hospital for two years and a course of instruction at a recognised Fever Hospital for two months[1] He must have had clinical instruction and must have held the posts of medical clinical clerk and surgical dresser for periods of six months each Candidates will be examined in Medicine (including Therapeutics and Mental Diseases), Pathology, *Forensic Medicine* and Hygiene, Surgery, Midwifery, *and Diseases of Women* The subjects may be divided into two groups—namely (1) Medicine, Pathology, *Forensic Medicine*, and *Hygiene*, and (2) Surgery, Midwifery, and Diseases of Women These groups may be taken either *separately or together* *The list* of candidates who have passed will be published in two parts—namely, an Honours list and a *Pass list* Bachelors of Medicine of this University who graduated in or before May, 1904, may obtain the B S degree by passing the Surgical part of the M B , B S examination.

Doctor of Medicine —The examination for this degree takes place twice in each year, commencing on the first Monday in December and on the first Monday in July Candidates may present themselves *for* examination in one of the following branches, namely (1) Medicine, (2) Pathology, (3) Mental Diseases, (4) Midwifery and Diseases of Women, (5) State Medicine, and (6) Tropical Medicine. Any candidate for the degree of M.D may transmit to the Registrar a thesis or published work having definite relation to the branch of Medicine in which he is a candidate, and if the thesis be approved by the examiners the candidate may be exempted from the written examination in that subject.

Master in Surgery —The examination for the degree of Master in Surgery takes place twice in each year and commences on the first Monday in December and on the first Monday in July

Fees —Matriculation £2, which will be returned if the candidate withdraws his name before the *last* day of entry Should he fail to present himself an additional £1 will be charged on subsequent presentation within eight months £2 will be charged on each subsequent entry At provincial examinations an additional fee of £1 *to* £3 is charged by the local authorities at the time *of* examination. First M B B S. Examination £5 for each entry to the entire examination, or £2 each subject if the examination is taken in parts Second M B , B S Examination Part I £2, repeated on each subsequent entry, Part II £8 for the whole examination For re examination in one subject £4 Third (Final) M B , B S Examination £10 for each entry to the whole examination and £5 for examination or re-examination in each group M D Examination £20, for re-examination £10 M S Examination As for M D

Full details of the prescribed curricula of study and the names of the recognised Internal and External Schools of the University, can be obtained free on application to the Academic Registrar, University of London, South Kensington S W

MEDICAL SCHOOLS OF THE UNIVERSITY OF LONDON[1]

ST BARTHOLOMEW'S HOSPITAL AND COLLEGE.—The hospital contains 757 beds, of which 687 are for patients in the hospital at Smithfield and 70 for convalescent patients at Swanley It receives over 8000 in patients annually and its out-patients and casualties amount to more than 78,000 annually Special departments have been organised for Diseases of Women and Children, the *Eye*, *Ear*, Larynx, and Skin, as well as for Orthopædic and Dental Surgery and for Electro therapeutics and X *Ray work* Surgical operations take place every day at 1 30 P M and Surgical Consultations are held on Thursdays at the same hour Medical Consultations are held on Thursdays at 3 15 P M The physicians and surgeons deliver clinical lectures weekly during both the winter and the summer sessions Clinical Lectures on all *special* subjects are also given The visits *of the physicians and surgeons* are made at 1 30

Ten house physicians and ten house surgeons *are* appointed annually, and are provided with rooms by the hospital authorities and receive £80 a year as salary A resident midwifery assistant, an ophthalmic house surgeon, and a house surgeon for diseases of the throat, nose, and ear are appointed *every* six months, and are provided with rooms and receive a salary of £80 a year Three resident anæsthetists are appointed annually, and receive salaries of £120, £100, and £100 respectively, with rooms An extern midwifery assistant is appointed every three months and receives a salary of £80 a year The clinical clerks, the obstetric clerks, the clerks to the medical out-patients, the dressers to the surgical in patients and to the out-patients, and the dressers in the special departments are chosen from the students A residential college is attached to the hospital

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[1] During the continuance of the war students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology, but who have completed one year's study after passing the First Examination for Medical Degrees will be allowed to count not more than six months service as clinical clerk or not more than six months service as surgical dresser in a recognised hospital as if they had so passed the examination in question Clinical service during the continuance of the war for any period of not more than twelve months in a medical Unit of the Regular or Territorial Forces or in a hospital or detachment of the Red Cross Society or in any hospital recognised by the military or naval authorities for war purposes will be accepted by the University as equivalent to the medical and surgical practice in a recognised hospital for an equal period and further any portion or the whole of the time *so* spent will be accepted as equivalent to time spent either as a clinical clerk or as a dresser at the choice of the candidate Clinical service during the continuance of the war as set forth above, will be similarly accepted for a period not exceeding six months from students who have not passed the Second Examination for Medical Degrees in Anatomy and Physiology but who have completed one year of study after passing the First Examination for Medical Degrees, as if they had so passed the examination in question

[1] For Ancillary Metropolitan Medical Schools see p 293

New Buildings —The new buildings comprise residential quarters for the resident staff, casualty, medical, surgical, and special out-patient departments, casualty wards, dispensary, and clinical lecture theatre A new chemical laboratory has been added to the Medical School, and a laboratory devoted to instruction in Public Health A second new block is devoted to Pathology, and contains the post mortem room as well as extensive laboratories for bacteriology, clinical pathology pathological histology, and pathological chemistry *The Medical School Buildings* include three large lecture theatres, a large dissecting room, a spacious library (containing 13,000 volumes), a well appointed museum of anatomy, physiology, comparative anatomy, materia medica, botany, and pathological anatomy The pathological museum is the most complete in the kingdom There are laboratories for chemistry, physiology, pharmacology, physics, public health, and biology, giving ample accommodation in every department

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Fees —An entrance fee of 10 guineas and 8 guineas is payable by full course and final course students respectively, and an annual fee of 26 guineas covers all other expenditure, with the exception of 7 guineas for vaccination, dispensing, and fever hospital attendance, which must be taken outside the hospital Membership of the Students' Club is included in these fees

Staff —Consulting Physicians Dr T H Green, Dr J Mitchell Bruce, and Dr F W Mott, F R S Physicians Dr J Galloway, Dr W Hunter, and Dr W C Bosanquet Assistant Physicians Dr W J Fenton, Dr D Forsyth, Dr R C Jewesbury, and Dr G Holmes Consulting Obstetric Physicians Dr J W Black and Dr A Routh Consulting Surgeons Mr J A Bloxam and Mr J H Morgan Surgeons Sir H F Waterhouse, Mr C Gibbs, and Mr H S Clogg Surgeons to Out-patients Mr P L Daniel and Mr W S Fenwick Assistant Surgeon (Vacant) Consulting Dental Surgeon Mr J Fairbank Ophthalmic Surgeon Mr E T Collins Obstetric Physician Dr T W Eden Assistant Obstetric Physician Dr C Lockyer Physician for Diseases of the Skin Dr J M H MacLeod Consulting Physician for Mental Diseases Dr C Mercier Physician for Mental Diseases Dr E D Macnamara Orthopædic Surgeon Mr H A. T Fairbank. Nose and Throat and Ear Surgeons Mr E B Waggett and Mr E D Davis Medical Officer Roentgen and Electrical Department Dr W Ironside Bruce Surgeon Dentist Mr J F Colyer Anæsthetists Mr C C Braine, Dr B E Potter, Mr H Hilliard, and Mr A de Prenderville Curators and Pathologists Dr R C Jewesbury and Dr G Holmes Bacteriologist Dr W W C Topley Morbid Histology Dr J W McLeod Medical Registrar Dr A W Oxford Surgical Registrar Mr H Gardiner Obstetrical Registrar Mr G Ley Resident Medical Officer Mr F W Collingwood

The lectures and demonstrations are delivered by the Staff on their respective subjects Other lecturers and demonstrators are —Tropical Diseases Sir Patrick Manson and Mr J Cantlie Medical Jurisprudence Dr W A Brend Toxicology Dr H F Morley

Further information may be obtained on application to the Dean, Dr W J Fenton, Medical School, Charing Cross Hospital, London, W C

ST GEORGE'S HOSPITAL —This hospital has a service of 436 beds, of which 180 are allotted to surgical, 150 to medical cases, and 100 are at the Convalescent Hospital at Wimbledon One ward is set apart for Diseases Peculiar to Women Children's beds are placed in all the women's wards Two wards are allotted to ophthalmic cases

Entrance Scholarships and Endowed Prizes of a total value of £482 are awarded annually, a detailed list is placed below The entire teaching and laboratories are now devoted to purely clinical subjects and arrangements have been made with the University of London for students who enter during the first, second, or third year of the curriculum as students of St George's to carry out the necessary courses of instruction at either University College or King's College Students then complete their course, without payment of any entrance fee, in a school entirely devoted to Clinical work. The school is admitting a strictly limited number of women students during the war These women students will be allowed to continue their studies until qualification

Eight house physicians and eight house surgeons are appointed annually All house appointments are open without fee to every perpetual student of the hospital and are made strictly in accordance with the merits of the candidates Special attention is directed to the following paid appointments, among others, which are open to students after they have held house office —Medical Registrarship at £200 per annum, Surgical Registrarship at £200, Assistant Curatorship of the Museum at £100, Obstetric Assistantship (Resident) at £50, the post of Resident Anæsthetist at £100, the post of Senior Anæsthetist at £50; the posts (3) of Junior Anæsthetists, each at £30 Great attention is paid by members of the staff to individual teaching A number of special courses are given in which the requirements of university and other examinations receive careful attention Special classes are held by members of the staff for all examinations The St. George's Hospital Club, with smoking and luncheon rooms on the hospital premises, and an athletic ground at Wimbledon, is an amalgamation of the Hunterian Society, the *Gazette*, and the chess, lawn tennis, boxing, hockey, rifle, and golf clubs Students have the advantage of a library of medical and scientific books which is kept up to-date Further information may be obtained from the Dean of the Medical School.

Staff —Consulting Physicians Dr T T Whipham, Sir Isambard Owen, and Dr W Ewart. Consulting Surgeons Mr Pick, Mr Haward, Sir W Bennett, Mr Marmaduke Sheild, and Mr F Jaffrey Consulting Obstetric Physician Dr W R Dakin Consulting Ophthalmic Surgeons Mr. Brudenell Carter and Mr Adams Frost Consulting Aural Surgeons Sir William Dalby and Mr W C Bull Consulting Dental Surgeon Mr Winterbottom. Consulting Bacteriologist Dr Charles Slater Physicians Dr H. D Rolleston, Dr C Ogle, Dr A Latham, and Dr J S Collier Obstetric Physician Dr A. F Stabb Assistant Physicians Dr A. J Jex Blake, Dr Golla, and Dr Torrens Assistant Obstetric Physician Dr Darwall Smith Physician to the Skin Department Dr W S Fox Surgeons Mr G R. Turner, Mr Pendlebury, Mr T Crisp English, and Mr W F Fedden Ophthalmic-Surgeon Mr H B Grimsdale. Assistant Ophthalmic Surgeon Mr R R James Assistant Surgeons Mr I Back, Mr C H Frankau, and Mr G A Ewart Surgeons to the Throat and Ear Department Mr. H S Barwell and Mr L Colledge Dental Surgeon Mr N G Bennett Assistant Dental Surgeon Mr Morley Honorary Bacteriologist Dr H Spitta, M V O

The staff deliver the lectures in the respective subjects assisted by the following lecturers and demonstrators — Tropical Medicine Dr C W Daniels Vaccination Mr E Climson Greenwood Mental Diseases Dr J C Woods. Public Health Mr C M Fegen Hygiene Dr H Spitta. Toxicological Chemistry Mr Gardner Pathological Chemistry Dr Golla Pathology and Forensic Medicine Dr R S Trevor Bacteriology and Clinical Pathology Dr E L Hunt Teacher of Anæsthetics Dr Blomfield. Assistant Teachers of Anæsthetics Dr Powell, Dr Longhurst and Dr Horne Advanced Physiology and Histology Dr G A Buckmaster Obstetric Tutor Dr D W Roy Medical Tutor Dr Helen Ingleby Surgical Tutor Mr J Ellison Dean of the Medical School and Curator of the Museum Dr R Salusbury Trevor

Scholarships and Prizes —At this school two entrance scholarships are given, the money value and the subjects of examination being as follows (*a*) and (*b*) two University Entrance Scholarships, 70 guineas and £50 respectively, Anatomy and Physiology The others are as follows (*c*) William Brown Exhibition, tenable for two years and open to perpetual pupils having registrable qualifications, £112 per annum, Practice of Medicine, Midwifery, and Surgery, (*d*) William Brown Exhibition, tenable for three years and open to perpetual pupils qualified not more than three years previously, £42 per annum, Essay and Original Work, (*e*) Allingham Scholarship in Surgery for Students qualified not more than three years, £50, Competitive Essay, (*f*) and (*g*) two Brackenbury Prizes, one in Medicine and one in Surgery, £30 each, open to students of not more than five years' standing, (*h*) H C Johnson Memorial Prize, £15, Practical Anatomy, (*i*) Pollock Prize, £17, Physiology, Physiological Chemistry, and Histology, (*j*) Clarke Prize, £5, (*k*) Thompson Medal, £5, Clinical Reports, (*l*) Brodie Prize, £7, Clinical Reports, (*m*) Webb Prize, open to perpetual pupils, £30, Bacteriology

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GUY'S HOSPITAL —This hospital, founded by Thomas Guy in 1721 for the reception of 400 patients, and enlarged through the aid of a large bequest from the late William Hunt, contains at the present time 643 beds The school buildings have been rebuilt and now offer very complete accommodation Within the grounds of the hospital are situated the residential college, with accommodation for 60 students the students' club with reading, smoking, luncheon, and dining rooms, a fives court, and swimming bath The athletic ground and club house is situated at Honor Oak Park, and can be reached in 20 minutes from the hospital

House physicians, house surgeons, out-patient officers and assistant house surgeons, obstetric residents, ophthalmic house surgeons, clinical assistants, clerks to anæsthetists, surgeons' and assistant surgeons' dressers, surgical and medical clinical clerks, post-mortem clerks, extern obstetric attendants, and dressers and clerks in the special departments are appointed from among the students upon the recommendation of the medical council according to merit

There is a Medical Section of the Officers' Training Corps of the University of London in connexion with the Hospital Drill is held in the grounds of the Hospital so that the senior students can carry out the necessary military training without any serious interruption of their work in the wards The establishment of a Venereal Clinic, in accordance with the Scheme of the Local Government Board and London County Council. Lectures and clinical instruction are given to which Medical Students and Practitioners are admitted without fee Residential College the rent of rooms remains the same, but the cost of board has increased

Medical and Surgical Staff and Lecturers —Consulting Physicians Sir F Taylor, Dr Newton Pitt and Sir Cooper Perry Consulting Surgeons Mr W H A Jacobson, Mr Golding Bird, Mr C J Symonds, and Sir W Arbuthnot Lane, Bart Consulting Physician for Mental Diseases Sir George Savage Consulting Aural Surgeon Mr W Laidlaw Purves Consulting Physician for Skin Diseases Sir Cooper Perry. Consulting Anæsthetists Mr Tom Bird and Dr H. F Lancaster Consulting Ophthalmic Surgeons Mr C Higgens and Mr W A. Brailey Consulting Dental Surgeons Mr Newland Pedley and Mr W A. Maggs Physicians and Assistant Physicians Dr W Hale White, Dr L E Shaw, Dr J Fawcett, Dr A. P Beddard, Dr H S French, Dr A. F Hurst Dr H. C Cameron, Dr G H Hunt, and Dr E P Poulton. Surgeons and Assistant Surgeons Mr L A. Dunn, Sir Alfred Fripp, Mr F J Steward Mr C H. Fagge, Mr R P Rowlands, Mr Philip Turner, Mr E C Hughes, Mr R Davies-Colley, and Mr L. Bromley Obstetric Physicians Mr G Bellingham Smith and Mr H. Chapple Ophthalmic Surgeons Mr H. L. Eason and Mr A W Ormond. Physician in Charge of Nervous Diseases Dr Hurst Physician in Charge of Children Dr Cameron. Physician in Psychological Medicine Dr Maurice Craig Surgeon in Charge of Genito-Urinary Department Mr A. R Thompson. Surgeons in Charge of Throat and Ear Department Mr W M. Mollison and Mr T B Layton. Surgeon in Charge of the Orthopædic Department Mr W H Trethowan. Surgeon in Charge of the Actino-Therapeutic Department Dr C E Iredell Dental Surgeons Mr R. Wynne Rouw, Mr H L. Pillin Mr M. F Hopson, and Mr J B Parfitt Anæsthetists Mr G Rowell, Mr C J Ogle, Dr F E Shipway Mr H M Page, Mr A. J McNair, and Mr A. M Zamora. Medical Registrars and Tutors Dr N Mutch, Mr H W Barber, and Mr Heaton Surgical Registrars and Tutors Mr A. H Todd, Mr G T Mullally, Mr R. C Ozanne, and Mr E G Schlesinger Radiographers Mr E W H Shenton and Dr Lindsay Locke. Bacteriologist to the Hospital Dr J W H Eyre. Resident Surgical Officer Mr W E Tanner Hon. Librarian Wills Library Dr H S French. Lying in Charity Mr Bellingham Smith and Mr Chapple. Dean of the Medical School Sir Cooper Perry Sub-Dean Dr Pembrey

Lecturers and Demonstrators in Special Subjects —Anæsthetics Mr Rowell. Hygiene and Public Health Dr R King Brown Pathology Dr P P Laidlaw Morbid Anatomy Dr French, Dr Cameron, and Dr Hunt Morbid Histology and Bacteriology Dr Eyre, Dr Laidlaw, and Dr Goodhart Medical and Surgical Pathology Classes Dr Hunt and Mr Davies-Colley Bacteriology Dr Eyre Practical Bacteriology Dr Eyre. Forensic Medicine Mr Ryffel. Anatomy Mr Rowlands and Mr Turner Practical Anatomy Mr Bromley and four Demonstrators Physiology Dr Pembrey Practical Physiology Dr Pembrey and two Demonstrators Materia Medica and Therapeutics Dr A F Hurst Pharmacology Dr A. J Clark. Practical Pharmacy the Hospital Pharmacist Chemistry Professor Martin Lowry, F R S Practical Chemistry Professor Lowry, and Demonstrators. Experimental Physics Dr Fison and Mr Abram Biology Mr Evans and Mr Reed. Psychology Dr Craig

Scholarships —Five entrance scholarships are awarded annually as follows —(*a*) one scholarship of £100 for students under 21 years of age Latin English, Greek or French or German, Arithmetic Euclid, and Algebra, (*b*) one scholarship for students under 21 years £120, Inorganic Chemistry, Physics, and Biology, (*c*) a Scholarship of £50, open to candidates under 21 years of age, to be awarded either in Arts or in Science, according to the discretion of the Examiners, and to the percentage of the marks obtained, (*d*) two scholarships, one of £75 and one of £35, for students under 25 years of age who have completed the curriculum for, or passed the examination in, Anatomy and Physiology for a medical degree in any University of the British Empire Subjects Any two of the following Anatomy, Physiology, Pharmacology, General Pathology, Organic Chemistry

In agreement with the practice of the Universities, an allowance will be made (1) for Military Service performed by candidates, the term ' military service" meaning service in the Naval or Military Forces of His Majesty or of His Majesty's Allies during the present War, or (2) in respect of other approved duties in connexion with national defence

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UNIVERSITY OF LONDON KING'S COLLEGE.—The medical department (Faculty of Science, Medical Division) at this College only deals with Preliminary and Intermediate subjects, and instruction in these subjects is given in the College laboratories by university professors and their assistants The following four hospital schools prepare their students only for the final examinations—viz., King's College Hospital Westminster Hospital, St George's Hospital, and Charing Cross Hospital—sending them to King's College for the earlier part of the curriculum The department is open to both men and women

The following are the teachers in the subjects concerned — Anatomy Dr E Barclay Smith (Professor) Dr R. J Gladstone, F R.S E, and Demonstrators Physiology Dr W D Halliburton, F R S (Professor), Dr Rosenheim and Dr Locke (Readers), and Dr de Souza (Lecturer) Psychology Dr W Brown (Reader) Pharmacology Dr W E Dixon (Professor) Zoology Dr A. Dendy (Professor) Botany Dr W B Bottomley (Professor) Chemistry Mr H Jackson (Daniell Professor), Dr Crossley (Professor), Mr P H. Kirkaldy (Assistant Professor), with Lecturers and Demonstrators Physics Dr O W Richardson (Wheatstone Professor), with Lecturers and Demonstrators

Fees —For London University course For First examination for medical degrees, 25 guineas, for the Second examination 58 guineas, or two instalments of 30 guineas each. For Conjoint Board course For First examination, 20 guineas, for Second examination, 58 guineas, or two instalments of 30 guineas each. For prospectus and further information application should be made to the Dean of the department (Professor Halliburton)

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—The advanced subjects in the curriculum are dealt with at the Medical School attached to King's College Hospital, which is situated at Denmark Hill, S E The hospital stands in the midst of a South London population, from which an immense amount of clinical material is forthcoming, an average of 3500 out-patients being dealt with weekly There are 350 beds available for in patients, and provision will ultimately be made for 600 beds Special departments are provided for the following diseases of women and children, the eye ear, throat and nose, skin, teeth, radiography, radio-therapy and radium therapy, massage, medical gymnastics and electro-therapeutics There are special operation theatres for diseases of women, for eye, throat, nose and ear cases, and a laboratory in the hospital where histological, bacteriological, hæmatological, and chemical investigations are carried out The appointments open to students are those of senior clinical assistant to the special departments, medical, surgical, and obstetric tutorships, resident casualty officer, resident anæsthetist, resident assistant pathologist, and medical, surgical, and obstetric registrarships There are 16 resident medical and surgical officers appointed yearly, and the usual senior surgical dressers medical and obstetric clinical clerks surgical dressers, clerks and dressers in all the special departments for in and out-patients, and post-mortem clerks

Hospital Staff —Consulting Physicians Dr Greville MacDonald, Sir David Ferrier F R.S, and Sir Hugh Beevor Consulting Surgeon Mr A. B Barrow Consulting Aural Surgeon Dr Urban Pritchard. Physicians Sir Nestor Tirard, Dr Norman Dalton, Dr Raymond Crawfurd Dr

Aldren Turner, Dr F W Tunnicliffe, and Dr J C Briscoe Assistant Physician Dr H W Wiltshire Surgeons Sir W Watson Cheyne, F R S, Mr A. Carless, Mr F F Burghard, and Mr G L Cheatle Assistant Surgeons Mr T P Legg and Mr Arthur Edmunds Obstetric and Gynæcological Surgeon Dr Hugh Playfair Assistant Obstetric and Gynæcological Surgeon Dr W Gilliatt. Physician for the Diseases of Children Dr George F Still Assistant Physician for Diseases of Children Dr R S Frew Surgeon for Diseases of the Throat Sir StClair Thomson Assistant Surgeon for Diseases of the Throat Dr C W M Hope Ophthalmic Surgeon Mr L V Cargill Assistant Ophthalmic Surgeon Dr H Willoughby Lyle Aural Surgeon Mr Arthur H Cheatle Assistant Aural Surgeon Mr G J Jenkins Physician for Diseases of the Skin Dr A Whitfield Physician for Tropical Diseases Sir Ronald Ross Dental Surgeon Mr C E Wallis Anæsthetists Dr J F W Silk and Dr G B Flux. Assistant Anæsthetist Mr Cecil Hughes Radiographer Dr Robert Knox Director of Department of Pathology Dr d'Este Emery Pathological Registrar Mr H A. Burridge Medical Tutor Dr A. S Woodwark Surgical Tutor Mr E G Gauntlett Obstetric Tutor Dr W Gilliatt Sambrooke Registrars Dr G W Shore and Mr J Everidge Obstetric Registrar Mr A C McAllister

Other lecturers are —Psychological Medicine Dr Steen Forensic Medicine Dr W R Smith Hygiene Dr W J R Simpson Surgical Applied Anatomy Mr G J Jenkins

Fees —The composition fee for Hospital work and Final subjects of the curriculum is 70 guineas if paid in one sum, or 72 guineas if paid in two instalments For information and prospectus application should be made to Dr H W Lyle, Dean of the Hospital, or to Mr S C Ranner, M A, Secretary of the Medical School, Denmark Hill, S E

Scholarships and Prizes —For the first two scholarships in the list here shown a complete course at King's College is required The money value and subjects of examination are as follows —(*a*) Two Warneford Scholarships, tenable for four years, £25 each per annum, (*b*) Sambrooke Scholarship, £50, (*c*) Rabbeth Scholarship, £20, (*d*) Medical Entrance Scholarships, £50, Anatomy and Physiology, and, £50, Pathology and Pharmacology, open to students who (1) propose to take a degree at any British University and have passed their University examination in Biology, Chemistry, and Physics, and who (2) will become students at King's College Hospital from date of entering upon Scholarship, (*e*) Two Medical Entrance Scholarships one in Arts and one in Science, £50 each, tenable for five years, successful candidates to study at King's College and King's College Hospital, (*f*) Three Medical Scholarships, £40 for fifth year students, £20 for third-year students, and £20 for second year students, (*g*) Two Sambrooke Registrarships, open to matriculated students who have filled certain appointments in hospital, £50 each, (*h*) Carter Prize, £15, Botany, (*i*) Tanner Prize, £10, Obstetrics and Diseases of Women, (*j*) Todd Prize, £4 4*s* and medal, Clinical Medicine, (*k*) Two Burney Yeo Entrance Scholarships, £80 each, open to students of Oxford and Cambridge

Athletics —The King's College Hospital Clubs and Societies Union was formed in 1908, and consists of the Listerian and Musical Societies, the Hospital Common Room, and the various athletic and sports clubs Admirable playing fields, over six acres in extent, have been provided for the use of the students on Dog Kennel Hill, Lordship-lane, S E, about ten minutes' walk from the hospital There are also Tennis Courts in the grounds of the Hospital and of "The Platanes," the hall of residence for students belonging to the hospital.

LONDON HOSPITAL.—The hospital has 922 beds in constant use and no beds are closed It is the only general hospital for East London—i e., for a million and a half people In patients last year, 17,637, out-patients, 130,831, accidents, 7814, major operations 6160 From the beginning of the war to the close of 1916 3947 military patients were admitted, while naval patients (who were first admitted at the end of September) totalled 384 Wards containing 15 beds have recently been provided for the treatment of syphilis, and 620 patients were admitted for treatment during 1916 Owing to the enormous number of patients more appointments are open to students than at any other hospital 141 qualified appointments are made annually and more than 150 dressers, clinical clerks, &c., appointed every three months. All are free to students of the College Holders of resident appointments have free board. Special classes are held for the degrees of the University of London, the Fellowship of the Royal College of Surgeons, and other higher examinations Special entries for medical and surgical practice can be made The Students' Hostel provides accommodation for 30 students The Clubs Union Athletic Ground is within easy reach of the hospital. The Metropolitan and other railways have stations close to the hospital and the college

Staff —Consulting Physician Dr F Warner Consulting Surgeons Mr Couper, Mr McCarthy, Sir Frederick Treves, Mr Warren Tay, Mr Mansell Moullin, Mr Hurry Fenwick, and Mr Dean Consulting Obstetric Physician Dr Lewers Consulting Dental Surgeon Mr Barrett Consulting Aural Surgeon Mr Mark Hovell. Physicians Dr Percy Kidd, Dr Frederick J Smith, Dr W J Hadley, Sir Bertrand Dawson, Dr Henry Head, F R S, Dr Robert Hutchison, Dr Lewis Smith, Dr Cecil Wall, Dr O Leyton, and Dr T Thompson Assistant Physician Dr C H Miller Surgeons Mr J Hutchinson, Mr T H. Openshaw, Mr P Furnivall, Mr Rigby Mr Sherren, Mr Lett, Mr Russell Howard and Mr R Warren Assistant Surgeons Mr Frank Kidd, Mr R Milne, Mr A. J Walton, and Mr H S Souttar Obstetric Physician Dr H R Andrews Assistant Obstetric Physician Dr. E L Holland Physician to Cardiac Department Sir James Mackenzie, F R S Demonstrator Dr J Parkinson. Physician to the Skin and Light Department Dr J H Sequeira. Ophthalmic Surgeons Mr A. B Roxburgh and Mr W T Lister Surgeon to the Throat Department Dr Lambert Lack Demonstrator Dr. N Patterson Aural Surgeon Mr Hunter Tod. Surgeon in charge of the Orthopædic Department Mr T H Openshaw Dental Surgeons Mr H Chapman, Sir Francis Farmer, Mr G Northcroft, Mr Paton Pollitt, Mr Evelyn Sprawson, and Mr Wilton Thew Medical Officer in charge of the Radiographic Department Dr Gilbert Scott Medical Officer in charge of the Electro- and Physico-Therapeutical Departments Dr R S Woods Analyst to the Hospital Mr Hugh Candy Demonstrator in Chemistry Mr J F Twort Bacteriologist to the Hospital Professor W Bulloch, F R S Assistant Bacteriologist Dr P Fildes Demonstrator Dr L. W Rajchman. Inoculation Department Dr G T Western. Pathological Institute Dr H M Turnbull, Director, Dr G B Bartlett, Assistant Director, Dr W W Woods, Junior Assistant Director Clinical Pathologist Dr P N Panton, Assistant, Dr H L Tidy Anæsthetists Dr Probyn Williams, Mr Clapham, and Mr Daly Assistant Anæsthetists Dr Austin Cooper and Mr J D Lyle

The staff deliver the lectures and demonstrations in their subjects Other lecturers and demonstrators are Anatomy Professor W Wright, Dr N C Rutherford, and Mr L J Austin Physiology and Histology Professor E. P Cathcart and Mr I Feldman Physics Dr A. H. Fison and Mr W A M Smart Biology Mr G P Mudge and Mr G T Cunningham Mental Diseases Dr. J Kennedy Will Materia Medica and Pharmacy Dr E. Mellanby and Mr F A. Hocking Aural Surgery Dr F F Muecke Obstetric Tutor Dr S G Luker Dean Professor William Wright, M B, D Sc, F R C S Secretary of College Mr E J Burdon

Scholarships and Prizes —At this school the successful candidates for the first items in the list here shown must enter as full students. The value and the subjects of examination are as follows —Price Scholarship £100, and one Entrance Scholarship of £50, subjects of First Medical Examination at the University of London, Epsom College Scholarship, free education, subjects of First Medical Examination as above, Price Scholarship, open to students of Oxford and Cambridge Universities, £52 10*s*, Human Anatomy and Physiology, Buxton Scholarship, £31 10*s*, subjects of Preliminary Examination in Arts, three Scholarships for Clinical Work, £20 each, Medicine, Surgery, and Obstetrics, Sutton Prize, £20, Pathology, Duckworth Nelson Prize, biennial, £10, Pathology, Practical Medicine, and Surgery, Letheby Prizes (2), £25, Chemistry, £25 in Anatomy and Physiology; eight Dressers' Prizes, amounting to £40, zeal efficiency, and knowledge of Elementary Clinical and Minor Surgery, Hutchinson Prize, triennial, £40, Clinical Surgery, two

Practical Anatomy Prizes, £6 and £4 respectively, Andrew Clark Prize, biennial, £26 Clinical Medicine and Pathology, James Anderson Prizes, £9, Elementary Clinical Medicine, Wynne Baxter Prize, £5 5*s*, Forensic Medicine, Arnold Thompson Prize, £5, and Liddle Prize, triennial £120

Medical Research Funds.—Research Funds of £23,000, including the Eliza Ann Alston Endowment Fund for Medical Research, provide valuable scholarships for men wishing to undertake research or desirous of preparing Theses for University degrees

The above arrangements are subject to revision in consequence of circumstances arising out of the war

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ST MARY'S HOSPITAL.—305 beds The number of in-patients treated during 1916 was 3288 The number of out-patients was 14,746 with 19,158 casualty cases, a total of 33 904 The situation of the hospital and Medical School in the centre of the residential districts of Paddington, Bayswater, and North Kensington renders it exceptionally convenient for students' rooms, a register of which is kept by the authorities for the use of students

Laboratories, &c—The Medical School provides for the entire curriculum. Special laboratories are in use for Biology Chemistry, and Physics, a series of lecture theatres and laboratories for Anatomy and Physiology, and a spacious and well lighted dissecting room. The Pathological Department is under the direction of Dr B H. Spilsbury, and a block of consulting rooms and laboratories in the New Wing of the Hospital has been equipped for the department of Therapeutic Inoculation

Appointments—All clinical appointments in the hospital are free to students of the Medical School and the resident medical officers are chosen by competitive examination. Six house physicians, six house surgeons, four obstetric officers and two Resident Medical Officers for the Inoculation Wards are appointed in each year and receive board and lodging in the hospital. Two resident anæsthetists are appointed in each year and receive a salary at the rate of £100 per annum, with board and lodging Four casualty house surgeons are appointed in each year upon the same conditions Several assistants in the department of Therapeutic Inoculation are appointed annually at salaries of £100 per annum and upwards In addition to the above, the senior appointments medical, surgical, and obstetric registrar, casualty physician, demonstrator of anatomy, physiology, and biology are made annually Two assistant pathologists are also appointed annually and are eligible for re-election.

Clubs, &c—The amalgamated clubs include all the various athletic clubs as well as the medical society, &c. There is a students' club on the Hospital premises, the membership of which is included in the amalgamated clubs The athletic clubs ground is situated at Park Royal, Acton and is easy of access from the Medical School. At the present time the pavilion and the greater part of the ground have been commandeered by the War Office.

Special Tuition—Special tuition is provided for the Intermediate and Final Examinations of the Universities of Oxford, Cambridge and London and for the Primary and Final F R.C S

The composition fee for full students is £140 if paid in one sum, or £145 if paid in four instalments University students who have completed their examinations in Anatomy and Physiology are admitted on payment of a composition fee of 65 guineas (£68 5*s*) paid in one sum or by payment of two annual instalments of 40 guineas (£42) and 30 guineas (£31 10*s*) respectively A system of annual fees is also in force as an alternative to composition fees Separate courses of lectures laboratory work, or hospital practice may be taken. The School Calendar and full information can be obtained from the Secretary St Mary's Hospital Medical School Paddington, W

Staff—Consulting Physician Dr Luff. Consulting Surgeons Mr Herbert Page, Mr A. J Pepper Sir G Anderson Critchett and Mr H E Juler (Ophthalmic) Sir Malcolm Morris (Skin) Dr Scanes Spicer (Throat) and Dr M Handfield Jones (Obstetric) Consulting Anæsthetist Mr Henry Davis Physicians Dr Sidney Phillips Dr Wilfred Harris and Sir John Broadbent. Surgeons Mr J Ernest Lane Mr Warren Low, and Mr W H Clayton Greene. Physicians in charge of Out-Patients Dr W H Willcox, Dr R. H Miller, and Dr F S Langmead. Surgeons in charge of Out-Patients Mr Maynard Smith, Mr Fitzwilliams, Mr V Z Cope, and Mr C A. Pannett (supernumerary) Obstetric Surgeon Mr T G Stevens Obstetric Surgeon in charge of Out-Patients Mr A. W Bourne Physician in charge of Children's Department Dr Sidney Phillips Ophthalmic Surgeons Mr Leslie Paton, Mr F A. Juler Physician to the Skin Department Dr Graham Little Physician to Department for Nervous Diseases Dr Wilfred Harris Physician to Department for Mental Diseases Dr R H Cole Dental Surgeon Mr W H Dolamore Surgeons to the Ear, Nose, and Throat Department Dr G William Hill and Mr O I Graham (assistant) Administrators of Anæsthetics Mr Henry Chaldecott, and Mr Phillips Director in Medical Charge of Inoculation Department Sir Almroth Wright, C B Assistant Director Captain S R Douglas, I.M.S Medical Officer in charge of X Ray Department Dr Harrison Orton Dean Sir John Broadbent

The staff deliver the lectures in the respective subjects, assisted by the following lecturers and demonstrators — Pathology Dr Spilsbury and Dr Kettle Bacteriology Dr Freeman, Mr Fleming and Dr Nias Demonstrator in Pathological Chemistry Mr J Webster Descriptive and Surgical Anatomy Professor J Ernest Frazer, Demonstrators Dr R H Robbins and Mr Kenneth Lees Physiology and Histology Dr H E Roaf and Dr Ellison Biology Mr W Bushton Chemistry Dr P Haas demonstrator, Mr J O F Fletcher Physics Mr W H White. Mental Diseases Dr R H Cole Diseases of the Eye Mr Leslie Paton and Mr Juler Surgical Registrar Mr K. A. Lees Practical Pharmacy Mr E A. Andrews. School Secretary Mr B E Matthews

Scholarships and Prizes—The money value and subjects of examination of these are as follows (*a*) and (*b*) Entrance Scholarships in Natural Science, £100 and £50 respectively, awarded by competition in September, (*c*) the Frederic John Palmer Scholarship in Natural Science £25, (*d*) University Scholarship in Natural Science, open to members of Oxford or Cambridge University, £52 10*s*, (*e*) University Scholarship in Natural Science, open to members of any British University £52 10*s*, (*f*) Epsom Scholarship, awarded by nomination, £52 10*s*, (*g*) Gold Medal, £20 an Essay on Some Special Point in Clinical Medicine, (*h*) Meadows' Prize awarded in alternate years, £8, Obstetrics, (*i*) Wallace Memorial Prize and Medal, for work in Vaccine Therapy, £5 5*s*

MIDDLESEX HOSPITAL.—The Hospital and Medical School are situated in Mortimer street, at the top of Berners-street, and only a few minutes' walk from Goodge-street Station (Hampstead and Charing Cross Tube), Oxford Circus Stations (Bakerloo and Central London Tubes), and Great Portland street Station (Metropolitan Railway)

The hospital contains 449 beds, including special wards for Cancer Cases Maternity and Gynæcological Cases, and for Diseases of Children and the Skin and Eye.

The Cancer Charity, containing 92 beds and Special Investigation Laboratories, offers unrivalled opportunities for the study of Cancer, both in its clinical and pathological aspects

In the Electro-Therapeutical Department students obtain instruction in the Treatment of Lupus and Cancer by the X Ray method of treatment An Electrocardiograph Department has recently been established.

The Hospital and Medical School are fully equipped for the theoretical and practical teaching of all the subjects of the medical curriculum, and for the Diplomas in Public Health. Ample laboratory and class room accommodation is provided

The Bland Sutton Institute of Pathology contains a new lecture theatre and large pathological, bacteriological, and clinical laboratories where every facility is given for original research. The Anatomical and Pathological Museum is now part of the Institute Special classes are held to prepare students for the Intermediate examinations of the Universities and for the Primary and Final examinations for the F R.C S (England) Diploma. There is a Residential College in the hospital for students

Hospital Appointments—All appointments are made without fee of any kind, and the following are appointed at intervals annually six house physicians eight house surgeons, two obstetric and gynæcological house surgeons, two casualty medical officers, two casualty surgical officers, and two resident officers to the special departments The medical and surgical casualty officers are appointed twice a year The medical, surgical, and obstetric and gynæcological registrars are appointed as vacancies arise

Non resident qualified clinical assistants are appointed to assist in the various out-patient departments Clinical clerks and surgical dressers are also appointed in every department

Scholarships, Prizes, &c —(*a*), (*b*), and (*c*) Three Entrance Scholarships, value £100, £50, and £25, and (*d*) a University Scholarship, value £50 are awarded annually in September The successful candidates are required to become general students of the school (*e*) A Freer Lucas Scholarship for Students of Epsom College is awarded annually on the nomination of the Headmaster There are also, (*f*) and (*g*), two Broderip Scholarships, value £60 and £40 respectively, (*h*) the Lyell Gold Medal and Scholarship, value £55 5*s*, (*i*) the John Murray Medal and Scholarship, value £25 (awarded every third year), (*k*) the Freeman Scholarship, value £30, (*l*) the Hetley Clinical Prize value £25, (*m*) the Leopold Hudson Prize, value 11 guineas, and (*n*) the Second Year's Exhibition, value 10 guineas There are also numerous class prize examinations [2]

In connexion with the Cancer Investigation Department the following Scholarships are awarded —Richard Hollins Research Scholarship, value £105, Salters' Company Cancer Research Scholarship, value £100, Walter Emden Scholarship, value £100, and a Cancer Research Scholarship, value £60

Fees —The Composition Fee for the curriculum for the diplomas of the Conjoint Board or Society of Apothecaries is 135 guineas, for the curriculum for the degrees of the University of London 145 guineas, for students who have passed the First Examination for Medical Degrees (University of London) 120 guineas, and for those who have completed their Anatomical and Physiological studies, 70 guineas The fee for Dental students is 54 guineas The fees may be paid by instalments

The Amalgamated Students' Club includes the following the Medical Society, the Common Room Society, the cricket club, the football clubs, the athletic club, the rowing club, the musical society, the chess club, the lawn tennis club, and the hockey club The athletic ground, which is eight acres in extent, is situated within easy access of the hospital—at Park Royal There is a gymnasium within the precincts of the hospital. A subscription to the Amalgamated Students' Club is payable by all General and Dental students

Medical and Surgical Staff —Consulting Physicians Dr Sidney Coupland, Sir Richard Douglas Powell, and Sir James Kingston Fowler Consulting Surgeons Sir Henry Morris and Sir Alfred Pearce Gould Con sulting Obstetric Physician Dr W Duncan Consulting Physician to the Skin Department Dr Liveing Consulting Ophthalmic Surgeon Mr Lang Consulting Surgeon to the Ear and Throat Department Mr Stephen Paget Consult- ing Dental Surgeons Mr W Hern and Mr W S Nowell Physicians Dr Pasteur, Dr Wynter, Dr Voelcker, and Dr Wethered Surgeons Sir John Bland Sutton, Mr Murray, Mr Kellock, and Mr W Sampson Handley Physician and Assistant Physician to the Department for Skin Diseases Dr Pringle and Dr MacCormac Physician to the Department for Nervous Diseases Dr Campbell Thomson (Dean of the Medical School) Obstetric and Gynæ- cological Surgeon and Assistant Obstetric and Gynæcological Surgeon Mr Berkeley and Mr Bonney Physician to Out- patients Dr Young Surgeon to Out-patients Mr G Taylor Assistant Physicians Dr Lakin, Dr MacCormac, and Dr Cockayne Assistant Surgeons Mr Webb-Johnson and Mr C H S Webb Ophthalmic Surgeon and Assistant Ophthalmic Surgeon Mr Lawson and Mr Greeves Surgeon to the Ear, Nose, and Throat Department Mr Somerville Hastings Dental Surgeon and Assistant Dental Surgeon Mr Turner and Mr James Anæsthetists Mr T G A. Burns, Mr H Charles, and Mr R E Apperly Assistant Anæsthetist (Resident) Mr Mason Registrars Dr G E Beaumont, Mr A. W Woo, Mr R O Fisher, and Dr Morson Resident Medical Officer Dr D R C Shepherd

The staff deliver the lectures and demonstrations in their respective subjects Other lecturers are Psychiatry Dr James Chambers Bacteriology under the supervision of the director of the Bland Sutton Institute of Pathology, Dr C H Browning Anatomy and Embryology Dr Yeates Physiology and Biology Dr Strickland Goodall. Chemistry and Physics Dr A. M. Kellas.

ST THOMAS'S HOSPITAL —This hospital received its present charter from King Edward VI, but as a monastic institution was in existence prior to the year 1207 The building occupies a unique position by the river, opposite the Houses of Parliament, and contains 1014 beds, including 530 for military patients The in patients last year numbered 9659, whilst the number of attendances as out-patients, including the casualty and light departments, was 234,812 There are special departments for the treatment of women, children, the eye, ear, nose and throat, skin, and teeth The Tuberculosis Department forms a part of the Lambeth scheme for treatment of patients and for instruction The Venereal Department has been established as part of the London County Council scheme Departments for light treatment, X rays, and the Physicotherapeutic Department are also special features A speech clinic has recently been inaugurated in connexion with the Children's Department Exceptional facilities are offered in the hospital laboratories for the study of general pathology, clinical pathology, chemical pathology, cardiology, and of treatment by serums and vaccines Surgical operations take place in the main theatres every day except Saturdays at 2 P M Clinical teaching in the wards, out-patients' and special departments, is available every day of the week. Clinical lectures are delivered every Wednesday during the sessions All appointments in the hospital are open to students without extra fee Clinical assistants to all the special departments are appointed every three months A resident assistant physician and a resident assistant surgeon, at a salary of £150 each, are appointed biennially, also four hospital registrars (medical, surgical, obstetric, and ophthalmic), the two former receive a salary of £150 and the two latter £50 An assistant in the clinical laboratory and an assistant pathologist are paid at the rate of £200 per annum. Appointments open to students before qualification Clinical clerks and dressers for in and out-patients are selected from students who have completed their third year's work Every student acts as clerk in the post mortem room and in one of the pathological laboratories, takes his turn on maternity duty under proper supervision in the maternity ward, thus obviating any necessity for seeking instruction elsewhere. Students are instructed in the administration of anæsthetics by one of the hospital anæsthetists The Students' Club comprises a spacious restaurant and smoking and reading room There is no occasion for students to leave the hospital buildings during working hours The curriculum is arranged to meet the requirements of all the Examining Bodies. Special classes are held for the examinations at the Uni versity of London and for the First and Final Fellowship Examinations of the Royal College of Surgeons of England. Tutorial classes in all subjects precede the various exa- minations The hospital is easily accessible from all parts.

Fees —The annual composition fee is 30 guineas, covering all tutorial classes—in addition to a fee on en trance Qualified practitioners are permitted to attend the hospital practice on terms which may be ascertained from the secretary

Staff —Consulting Physicians Dr Harley, Sir Seymour J Sharkey, and Dr Acland Consulting Obstetrical Physician Dr Gervis Consulting Ophthalmic Surgeon Mr Lawford. Consulting Anæsthetist Mr W Tyrrell Consulting Dentist Mr C E Truman Physicians Dr Hawkins, Dr Mackenzie, Dr Turney, Dr Perkins, and Dr Box. Sur geons Sir G H Makins Mr Battle, Mr Ballance, Mr Robinson Mr Cuthbert Wallace, Mr E M Corner, and Mr Percy Sargent Physicians to Out-patients Dr Russell, Dr Buzzard, and Dr Cassidy Surgeons to Out-patients Mr C A R Nitch and Mr J E Adams Obstetric Physicians Dr Fairbairn and Dr Hedley Ophthalmic Surgeons Mr Fisher and Mr Hudson Phy sician for Diseases of Children Dr Box Surgeon for Diseases of Children Mr J E Adams Mental Diseases Dr R Percy Smith Surgeon for Diseases of the Throat

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[2] Certain of these scholarships and those in connexion with the Cancer Investigation Department have been modified for the period of the war particulars of which can be obtained on application

Mr W G Howarth. Physician for Diseases of the Skin Dr E Stainer Surgeon for Diseases of the Ear Mr Marriage. Dental Surgeon Mr R McKay Resident Assistant Physician Dr G Hoffmann Resident Assistant Surgeon Mr S H Rouquette Anæsthetists Dr H Low, Dr Mennell, Dr Hedley, and Dr Dunkley Pharmaceutist Mr J A. Jennings Curator of Museum Professor S G Shattock. Director of Laboratories Mr L S Dudgeon Chemical Pathologist Dr Hugh Maclean Superintendent of X Ray Department Mr A. D Reid Physico-therapeutic Department Mr R Timberg, Dr J B Mennell, and Mr W R Bristow Tuberculosis Department Dr R C Wingfield. Cardiograph Department Dr M. A. Cassidy

The staff deliver the lectures in their respective subjects, assisted by the following lecturers and demonstrators — Anatomy Professor F G Parsons Chemistry Dr Le Sueur Physiology Dr J Mellanby Biology Dr O Donoghue and Mr W Rushton. Physics Mr Brinkworth Midwifery and Diseases of Women Dr Fairbairn Pharmacology and Therapeutics Dr Woolley Forensic Medicine and Toxicology Dr E Smith and Dr J C Withers Mental Diseases Dr W H. B Stoddart Public Health Dr H P Newsholme. Tropical Medicine Professor Sandwith. Instruction in Vaccination by Dr Cope

Dean of the School Dr E. Stainer Sub-Dean Dr C R Box Secretary Mr G Q Roberts, from whom any further information may be obtained

Scholarships and Prizes —At this school there are five Entrance Scholarships—namely, two in Arts equivalent to the tuition fees for the first medical examination, two in Natural Science of the value of £150 and £60 respectively, to be taken out in tuition fees, and the University Scholarship of £50 in Anatomy, Physiology, and Chemistry The money value and subjects of examination of the remainder are as follows (*a*) and (*b*) two College Prizes, one for second-year students and one for third year students £10 and £5 respectively, (*c*) William Tite Scholarship for second-year students, £25, (*d*) and (*e*) Musgrove Scholarship or (alternately) Peacock Scholarship, each for third-year students and tenable for two years, £35 each, (*f*) three College Prizes for fifth-year students of £10 each and three of £5 each, (*g*) Cheselden Medal, Surgery and Anatomy, (*h*) Mead Medal, Medicine, Pathology, and Hygiene, (*i*) Toller Prize, Medicine, Pathology, and Hygiene, (*j*) Bristowe Medal, Pathology and Morbid Anatomy (*k*) Solly Medal and Prize biennially, Surgical Reports, (*l*) Treasurer s Gold Medal for the most distinguished fifth year student, (*m*) Wainwright Prize, Medicine, Pathology, and Hygiene, (*n*) Hadden Prize, Pathology, (*o*) Beaney Scholarship £50 biennially, Surgery and Surgical Pathology, (*p*) Sutton Sams Prize, biennially, reports of cases in Obstetric Medicine, (*q*) Grainger Testimonial Prize, £31 10*s* Anatomy and Physiology, (*r*) Salters' Company Research Fellowship, tenable for three years, £100 annually, Pharmacology, (*s*) Louis Jenner Research Scholarship, tenable for two years, £60 annually, Pathology, and (*t*) Research Scholarship, tenable for two years, £200 per annum.

UNIVERSITY OF LONDON, UNIVERSITY COLLEGE.—University College has been constituted a University centre for the teaching of medical sciences The College Faculty of Medical Sciences comprises the Departments of Physics Chemistry Botany and Zoology (the Preliminary Medical Sciences), also the Departments of Anatomy, Physiology, and Pharmacology (the Intermediate Medical Sciences), and the Departments of Hygiene and Public Health, and of Pathological Chemistry (Post-graduate Study)

Faculty of Medical Sciences —Composition fees —For the courses required by the University of London. 1 For the First Medical Course, 26 guineas entitling to one attendance and to the privileges of the Union Society for one session 2. For the Second Medical (Intermediate) Course, 58 guineas if paid in one sum, 60 guineas if paid in two instalments of 30 guineas each. This fee entitles to attendance at Anatomy and Physiology during three years and to one attendance at Organic and Applied Chemistry, Pharmacology and Materia Medica, and to the privileges of the Union Society for two sessions

For the medical education required by the Examining Board in England and the Society of Apothecaries First examination Parts I II III, 21 guineas, entitling to attendance for the First and Second Terms and to the privileges of the Union Society for one session, 26 guineas, entitling to attendance throughout the session and to the privileges of the Union Society for one session First Examination, Part IV, and second examination, 58 guineas if paid in one sum, and 60 guineas if paid in two instalments of 30 guineas each This fee entitles to attendance during three years and to the privileges of the Union Society for two sessions

Professors and Lecturers —1. First Medical Course — Chemistry —Professors J N Collie F R.S, and F G Donnan, F R S, assistant professor Samuel Smiles D Sc, teachers of chemistry to medical students R H. Plimmer D Sc, and W B Tuck, D Sc., assistants Irvine Masson, M Sc, R E Slade, D Sc, Katharine A. Burke, D Sc and H Terrey, B Sc, demonstrator W W Reeve, B Sc. Physics —Professor W H Bragg, F R S, reader in thermo-dynamics A. W Porter F R S, assistants N Eumorfopoulos, B Sc, A. O Rankine, D Sc., F L Hopwood, M Sc, and D O Wood, M Sc Botany — Professor F W Oliver, F R S, reader in plant physiology T G Hill, A.R C S, assistant E M Cutting, M A. Zoology —Professor J P Hill, F R S, assistants C H O'Donoghue, D Sc., F J Bridgman, A.R C S, and Katharine M Parker, D Sc 2. Second Medical (Intermediate) Course.—Anatomy —Professor G D Thane, F R S, demonstrator and lecturer in surgical anatomy H T Mant, F R C S, demonstrator, lecturer in physical anthropology, and curator of the museum D E Derry, M B, demonstrator and lecturer in anatomy T B Johnston, M B, assistant demonstrators G V Anderson R B Green and N D Ball. Jodrell Professor of Physiology E H Starling, F R S Professor of General Physiology W M Bayliss, F R S. Readers G A. Buckmaster, M D, and R H Plimmer, D Sc Assistant and Sharpey Scholar C Lovatt Evans, D Sc Pharmacology —Professor A. R Cushny, F R S Assistant J W C Gunn, M B

Scholarships and Prizes —The first three items on the present list require a complete intermediate course at University College. The money value and subjects at examinations are as follows (*a*) The Bucknill Scholarship 135 guineas, (*b*) and (*c*) two Entrance Exhibitions, 55 guineas each, Chemistry, Physics, Botany, and Zoology, (*d*) Cluff Memorial Prize £15 biennially, Anatomy, Physiology, and Chemistry, (*e*) Schäfer Prize in Physiology, £18 triennially, (*f*) Sharpey Physiological Scholarship £105, Biological Sciences, (*g*) Morris Bursary for sons of deceased professional men by nomination, tenable for two years, £16 a year, and (*h*) five Gold and five Silver Medals awarded annually in various departments

Women students are admitted

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL — Dean Dr G F Blacker Acting Secretary G E Adams Fees for Preliminary and Intermediate Course See under University *College* For the Final M.B, B S (London) Course, 80 guineas if paid in one sum, 82 guineas if paid in two instalments, as follows— first year, 50 guineas, second year, 32 guineas This fee entitles to attendance on Lectures and Hospital Practice during three years and to one attendance on Practical Pathology and Practical Surgery Vaccination and attend ance at a Fever Hospital are not included Students who obtain a medical qualification within three years of the time of commencing this course are not required to pay an additional fee for further attendance This course of instruction is also suitable for the corresponding examinations at the Universities of Oxford, Cambridge, and Durham and for the medical education required by the Examining Board in England and the Society of Apothecaries

There are over 300 beds in the hospital.

Special Departments, Clinical and Laboratory Facilities — Those who are desirous of carrying out original research in Pathology including Morbid Anatomy, Bacteriology, Experimental Pathology, and Chemical Pathology, are admitted to work in the laboratories of the school by the Director of Pathological Studies and Research, and under certain conditions can receive grants from the Charles Graham Medical Research Fund A special course of instruction is given for preparation for the examinations for Diplomas in Public Health of the various universities and examining bodies, also special courses of Lectures and

Demonstrations in Anæsthetics, Diseases of the Eye, Ear, Nose, and Throat, Skin, and Diseases of the Teeth, in Electrical and Radioscopic Diagnosis and Treatment, in Clinical and Tropical Pathology, and in Cardiac Pathology These courses are designed for senior students and graduates

Appointments tenable by Students —Clerkships and dresserships to the physicians, surgeons, anæsthetist, and pathologist are allotted amongst the students of the hospital Maternity students are appointed each month and reside in the Students' House connected with the Medical School and Hospital. Eight house physicians and house surgeons, four senior and four junior obstetric assistants are selected annually by examination from among the senior students who have a medical qualification The house physicians and house surgeons reside free in the hospital for six months, and the senior obstetric assistants for three months In addition to these posts there are certain special appointments which are vacant from time to time and are filled by senior students of the hospital 1. The Resident Medical Officer This officer is appointed for a period of two years and is chosen from amongst the more senior recent residents of the hospital 2 The two Surgical Registrars are also chosen from among the more senior recent residents of the hospital. 3 The Obstetric Registrar 4 Two Casualty Medical Officers and a Casualty Surgical Officer are appointed, each for a period of six months 5 Assistant in Ear and Throat Department, appointed for one year 6 Assistant in Ophthalmic Department, appointed for one year 7 Registrar in Anæsthetic Department, appointed for one year 8 Deputy Anæsthetists During the absence of one or another of the Anæsthetists in the summer months a senior qualified student is appointed as a substitute and is granted a special certificate

Museum of Pathological Anatomy —The Museum, a spacious and well lighted room, is open for study from 9 A M to 5 P M Microscopic sections of most of the specimens in the Museum have been prepared and are available for the use of students on application to the Curator The Museum contains 1100 admirable paintings by Sir Robert Carswell and Sir Charles Bell and a collection of old surgical instruments formerly belonging to Robert Liston

The Anatomical Museum of the University of London, University College, is open to all students of University College Hospital and Medical School on the recommendation of the School Committee

The Medical Library is open daily for the purposes of study to every student of the Medical School from 9 A M to 5 P M, Saturdays 9 A M to 1 P M It contains about 13,500 works on medical subjects including all the current text-books and works of reference required for study or research

The Medical Society of University College Hospital Medical School exists for the dual purpose (1) of promoting the study of Medical and Surgical Science, and (2) of promoting social intercourse among its members All Students of the Medical School are eligible for membership Meetings are held once a fortnight for the purpose of discussing subjects connected with the study of medicine In its social aspect the society includes various athletic clubs and superintends the gymnasium and squash racquet court in the Medical School The Athletic Ground, which is used in conjunction with the Union Society of the University of London University College, is situated near the Great Western Railway station at Perivale

Residence of Students —A register of boarding residences is kept in the office of the Medical School for the convenience of students, these residences are not under the control of the school authorities University College Hall, Ealing, is recognised by the Medical School authorities as a residential hostel The Students' House in University street contains large and comfortable rooms The Maternity Students occupy them on payment of a moderate charge Gentlemen who desire assistance in their studies should consult the Dean or Lecturers

Hospital Staff —Consulting Physicians Dr F T Roberts, Sir John Williams, and Sir Thomas Barlow Physicians Sir John Rose Bradford, F R S, Dr Sidney Martin, F R S, Dr H Batty Shaw, and Dr F J Poynton Assistant Physicians Dr C Bolton, Dr T R Elliott, and Dr T Lewis. Obstetric Physicians Dr H Spencer and Dr G F Blacker Physician to Skin Department Dr A M H. Gray Physician in charge of Mental Diseases Department Dr B Hart. Consulting Surgeons Sir John Tweedy (Ophthalmic), Sir Rickman Godlee, and Mr B Pollard Surgeons Mr Raymond Johnson and Mr Trotter, Assistant Surgeon Mr Gwynne Williams Ophthalmic Surgeons Mr P Flemming and Mr J H Parsons Ear, Nose, and Throat Department Mr Herbert Tilley Assistant Surgeon Mr G S Hett Anæsthetists Dr D W Buxton, Dr H J Shirley, and Dr A. B Kingsford Assistant Anæsthetist Mr F S Rood Dental Surgeons Mr P S Spokes and Mr H J Relph Surgical Registrars Mr E K Martin and Mr C E Shattock. Resident Medical Officer Dr H L Tasker Pathologist Mr T W P Lawrence Bacteriologist Dr F H Teale Assistant Physician in Charge of Cardiographic Department Dr T Lewis Officer in Charge of Electro-Radiographic Department Mr R H Cooper Pharmacist Mr C H Hampshire Other lecturers and demonstrators are Surgical Anatomy Mr H T Mant Diseases of Childhood Dr Dr C Bolton, Mr P Flemming, Mr Gwynne Williams, and Mr H Tilley General Pathology Dr A. E Boycott. Practical Pathology Mr D' Embleton, Mr S H. Warren, and Mr E Bach In the Dental Department in Great Portland street, formerly known as the National Dental Hospital, there is afforded the opportunity for attending lectures and practical instruction in diseases of the mouth and teeth

Scholarships and Prizes —At this School the first two Scholarships (*a*) and (*b*) require a complete course at University College and University College Hospital Medical School, the second two (*c*) and (*d*) require a final course at the Medical School The money value and subjects of examination are as follows —(*a*) Entrance Scholarship, Bucknill, 135 guineas, Chemistry, Physics, Botany, and Zoology, (*b*) Epsom Free Medical Scholarship, subjects of Preliminary Scientific Examination and Nomination by Epsom College, (*c*) and (*d*) two Goldsmid Entrance Exhibitions, 80 guineas each, Anatomy and Physiology, (*e*) Graham Scholarship in Pathology, £200 per annum for two years, awarded by the Senate of the University of London, (*f*) Atkinson Morley Scholarship, tenable for three years, £45 per annum, Surgery, (*g*) Atchison Scholarship, tenable for two years, £55 per annum, General Proficiency in Medical Studies (*h*) Magrath Clinical Scholarship, about £100, Clinical Cases, (*i*) Percival Alleyn Scholarship, about £60, Surgery, (*j*) Filliter Exhibition, £30, Pathology, (*k*) Erichsen Prize, £10 10*s*, Practical Surgery, (*l*) two Senior and two Junior Fellowes Clinical Medals for Clinical Medicine, (*m*) two Liston Gold Medals for Clinical Surgery, (*n*) Alexander Bruce Gold Medal for Pathology and Surgery, and (*o*) Tuke Silver and Bronze Medals for Pathology (*p*) Radcliffe Crocker Travelling Scholarship for Dermatology

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WESTMINSTER HOSPITAL —The hospital contains 215 beds and affords relief to upwards of 2000 in patients and 30,000 out-patients annually There are separate departments for Diseases of the Eye, Ear, Skin, Teeth, and Throat, for Orthopædic practice, for Diseases of Women, for Diseases of Children, for Radiography, and for the Light Treatment. The Anatomical, Pathological, and Materia Medica Museums are open to all students of the school

A medical and surgical registrar, each with a salary of £50, are appointed annually Two house physicians, three house surgeons, and a resident obstetric assistant are appointed for six months after examination, and are provided with rooms and commons, also one assistant house physician and one assistant house surgeon with commons only Clinical assistants to the assistant physicians and assistant surgeons, and to the officers in charge of special departments, are appointed from among qualified students of the hospital

By a scheme for the concentration of the teaching of the preliminary and intermediate subjects of the curriculum, which has the support of the London University, an arrangement has been made by the Westminster School for the teaching of these subjects at King's College. Students, however, join the Westminster Medical School as formerly and may compete for Entrance Scholarships as heretofore

There is laboratory accommodation for practical work in Chemistry, Physics, Biology, Anatomy, Physiology, Histology, Pathology, and Bacteriology, and a new Clinical

Laboratory has recently been erected. Facilities for research are afforded in all the laboratories

For membership of the Clubs Union students are not required to pay, the expense being covered by the entrance fee to the school

Staff—Consulting Medical Staff Sir Bryan Donkin, Dr de Havilland Hall, and Dr Hebb (lecturer on general pathology with Dr Braxton Hicks) Consulting Surgical Staff Mr Richard Davy, Mr G Cowell, and Mr N C Macnamara. Medical In patient Staff Dr A M Gossage, Dr Purves Stewart, and Dr Carmalt Jones Obstetric Physician Dr G H. Drummond Robinson Surgical In patient Staff Mr W G Spencer, Mr A H Tubby, and Mr William Turner Medical Out-patient Staff Dr D H de Souza, Dr Kinnier Wilson, and Dr O K. Williamson. Physician for Diseases of the Skin Dr S E Dore Assistant Obstetric Physician Dr S Dodd. Medical Officer in Charge of Electrical Department Mr E S Worrall Surgical Out-patient Staff Mr Arthur Evans and Mr Rock Carling Surgeon in charge of the Throat Department Mr P R W De Santi Ophthalmic Surgeon Mr G T B James Surgeon in charge of the Orthopædic Department (Vacant) Surgeon-in-charge of the Ear Department Mr P R W De Santi. Dental Surgeons Mr C W Glassington and Mr E Gardner Administrators of Anæsthetics Dr N W *Bourns*, Dr V B Orr and Mr E W Gandy Physician Pathologist Dr R G Hebb Assistant Pathologist and Curator of Museum Dr J A Braxton Hicks Resident Medical Officer Dr H J Johnson Medical Registrar (Vacant) Acting Surgical Registrar (Vacant) Pharmacist Mr A. E Tanner Secretary Mr S M Quennell

The staff deliver the lectures and give demonstrations in their respective subjects Other lecturers and demonstrators are —Medicine Lieutenant-Colonel Pratt Elementary Practical Medicine Mr Worrall. Insanity Dr Hubert J Norman. Surgery Mr W Turner Materia Medica, Therapeutics, and Pharmacology Dr Dixon Forensic Medicine Dr Burnford Toxicology Dr H. Wilson Hake Public Health Dr S Monckton Copeman Bacteriology Dr Burnford Anatomy (Professor) Dr Barclay Smith, (Lecturer) Dr R J Gladstone Demonstrators of Practical Anatomy Mr Boyd and Mr Fenwick. Physiology and Practical Physiology and Histology Dr Halliburton, Dr Locke, and Dr Rosenheim. Biology Dr Bottomley and Mr Schwartz Chemistry and Practical Chemistry Dr Crossley Dr Jackson, Mr Kirkaldy, Mr Collins, and Mr Hinkel Physics Dr Richardson, Dr Allen, Dr H Moore, and Mr Martyn Secretary and Librarian Dr E B Hulbert

Scholarships and Prizes —The following Entrance Scholarships are offered for competition Winter Session (*a*) Arts Scholarship the "Guthrie," £60 (*b*) Science Scholarships Natural Science Scholarship, £60, Chemistry and Physics Scholarship £30, and Two Scholarships in Anatomy and Physiology, £50 each. Summer Session Two Scholarships in Anatomy and Physiology, £50 each During the period of study the following prizes may be competed for Sturges Prize in Clinical Medicine, about £6, Notes of Cases, Clinical Surgery Prize, £5, Notes of Cases, Chadwick Prize £21 in books or instruments, Medicine and Surgery, including Pathology and Applied Anatomy and Physiology, Frederic Bird Medal and Prize open to Fourth year Students, £14 in medal and books or instruments—Midwifery, Diseases of Women Medicine, Pathology, Forensic Medicine and Bacteriology and Public Health and Toxicology, Abrahams Prize in Clinical Pathology, 5 guineas, a Paper and Tests in Practical Work, Alfred Hughes Memorial Prize, open to Second year Students, about £5 in books or instruments—Anatomy, Huxley Memorial Prize, 3 guineas in books or cash, open to Second year Students—Physiology, Carter Gold Medal and Prize for Botany, open to Students of not more than three years attendance, gold medal and books of the joint value of £15, Jelf Medal awarded to Third year Students, Second year Scholarship, £20 Elementary Anatomy, Physiology, Histology, and Organic Chemistry, Daniell Scholarship, tenable for two years £20 Chemistry, Rabbeth Scholarship open to First-year Students £20, Class Examinations in the Preliminary Scientific Course, and the Sambrooke King s College Scholarship in Science value £25

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter street, Brunswick square, W C —The fee for the medical course for the degrees of the University of London and for the diplomas of the Royal Colleges of England and for other qualifications is £169 in one sum, or £179 in five instalments These sums include library and laboratory fees

The Royal Free Hospital contains 184 beds, of which 78 are reserved for surgical, 64 for medical, 13 for gynæcological, six for ophthalmic, 11 for maternity, and four for isolation cases A new block has recently been completed containing large and completely equipped departments for Outpatients, Massage, Dental, X Ray, and Electrical Work, Maternity (interne 11 beds, and externe), and Casualty New and enlarged students' quarters are also provided Students can also attend the in patient and out-patient practice of the New Hospital for Women

An agreement has also been made under which students of the school attend full clinical courses at St Mary's Hospital, Paddington (305 beds)

Special courses are arranged for the Primary Fellowship Examination of the College of Surgeons, also for dental students in conjunction with the London Dental Hospital, Leicester square, and the National Dental Hospital.

Students after qualification can hold the posts of house physician, house surgeon, obstetric assistants, clinical assistants, anæsthetists and assistant anæsthetist, medical and surgical registrars, pathologists, medical electrician, and museum curator, and at the Medical School the posts of demonstrators in the departments of Anatomy, Physiology, Chemistry, and Physics They can also hold posts at the New Hospital for Women, South London Hospital for Women and Children, and at four other hospitals in London entirely officered by medical women Many other resident posts in London and elsewhere are also open to them

The School buildings have been entirely rebuilt in recent years, and there are spacious, well equipped laboratories, which afford every facility for efficiency of teaching and practical work in all departments An extension of the School was opened in 1916 The extension will enable 90–100 new students to be received at the School each year

There are residential chambers at 8, Hunter street, and 36, Tavistock square, and the Warden can be consulted on the subject of other residences for students The Students' Union arranges the social, athletic, and other clubs and societies at the School

Staff—Consulting Physicians Dr S West and Dr Sainsbury Physicians Dr J W Carr, Dr A. G Phear, and Dr W P S Branson. Assistant Physicians Dr Saunders, and Dr Firth Consulting Surgeon Mr A B Barrow Surgeons Mr J Berry, Mr W H Evans, and Mr Cunning Consulting Neurologist Dr Farquhar Buzzard Consulting Physician for Diseases of Women Dr Mary Scharlieb Physicians for Diseases of Women Dr Ethel Vaughan-Sawyer and Dr Florence Barrett Surgeon for Diseases of Throat, Nose, and Ear Mr J Gay French Surgeon for Diseases of the Eye Mr M L Hepburn Assistant Surgeons Mr C Pannett and Mr C A Joll Surgeon for Diseases of Skin Mr W H Evans Dental Surgeons Dr Harwood, L D S, and Mr E P Hudson, L D S Pathologist Dr Mary Schofield Registrars Dr Cuthbert and Dr Dearnley Anæsthetists Dr May Dickinson Berry, Dr Jane Turnbull, Dr Vivian Orr, and Dr Anna Gilliatt Secretary Mr Reginald Garratt

Lecturers —At the School Anatomy and Practical Anatomy Professor F Wood Jones Physiology and Practical Physiology Dr Winifred Cullis Chemistry Mr J A Gardner, M A., F I C, and Miss Widdows, B Sc Physics Miss M Waller, B Sc Biology Mr Mudge, A R C S Pharmacology Dr F Ransom Practice of Medicine Dr J W Carr and Dr Emily Flemming Midwifery Dr Florence Barrett Gynæcology Dr Ethel Vaughan Sawyer Forensic Medicine Dr Hawthorne Toxicology Dr Wilson Hake Practice of Surgery Miss Aldrich Blake and Mr W H. Evans Operative Surgery Mr Joll Pathology Dr W d'Este Emery Mental Pathology Dr J G Porter Phillips Tropical Diseases Dr C W Daniels Operative Midwifery Dr Florence Barrett. Demonstrators of Anatomy, Dr Mary Keene and Dr Joyce Partridge, of Physiology, Mrs Tribe, B Sc Miss Bond, B Sc, Miss Hewen, M Sc, Miss Wiltshire, B Sc, of Chemistry, Miss Williams B Sc., Mrs. Taylor, Miss Mackenzie, B Sc., of Physics, Miss Griffiths, B Sc, Miss

Alcock, B Sc , Miss Leyshon, B Sc , of Practical Pharmacy, Miss Buchanan, M P S

Dean of the School, Miss Aldrich Blake, M D , M S , Honorary Secretary, Dr May Thorne , Warden and Secretary, Miss L M Brooks

Scholarships and Prizes—(*a*) Isabel Thorne Scholarship, £30 (*b*) St Dunstan's Medical Exhibition, £60 a year tenable for three or five years (*c*) Mrs George M Smith Scholarship, £50 a year tenable for three or five years and next to be awarded in 1919 (*d*) Bostock Scholarship, tenable for two or four years, and next to be awarded in June, 1919, £60 (*e*) Mabel Sharman Crawford Scholarship, tenable for four years, £20 a year (*f*) Mabel Webb Research Scholarship, tenable for one year and renewable, £30, *Physiology, Chemistry or Pathology* (*g*) Fanny Butler Scholarship, tenable for four years , next award in July, 1918, £14 10*s* (*h*) John Byron Bursary, tenable *from two to four years, for students already in the School* requiring assistance for the prosecution of their medical studies, application to the Secretary by March 31st , next award in March, 1919, £20 (*i*) Ellen Walker *Bursary tenable* for two years, awarded to a student beginning fourth year of medical study, £25 a year (*k*) Helen Prideaux Scholarship, awarded every second year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £40 (*l*) Agnes Guthrie Bursary, value £60 is offered annually to students who desire to pursue a full course of study for the Licentiateship in Dental Surgery (*m*) Dr Edith Pechey Phipson Post-graduate Scholarship of the value of £40, awarded annually in June It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study (*n*) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year , next award in 1919 Two Richardson Kuhlmann Prizes are given each year, value £12 for proficiency in Clinical Obstetrics, value £8, for proficiency in senior subjects respectively Two Evans Prizes of £2 2*s* and £1 1*s* are given each year on the results of the class examination in Midwifery The Evans Prize for Operative Midwifery, value £5 5*s* , is awarded yearly The Edith Pechey Phipson Prize in Pharmacology, value £3 3*s* , is awarded annually There is also a small loan fund from which assistance can occasionally be given to students and to graduates who specially require pecuniary help Prizes and Certificates of Honour are awarded in each class at the end of the session

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UNIVERSITY OF DURHAM

Two Diplomas, one Licence, and six degrees are conferred —viz , the Diploma in Public Health, Diploma in Psychiatry, the Licence in Dental Surgery and the degrees of Bachelor of Medicine, Bachelor of Surgery, Master of Surgery, Doctor of Medicine, Bachelor of Hygiene, and Doctor of Hygiene

For the degree of *Bachelor of Medicine* there are four professional examinations The subjects of the First Examination are—*Elementary Anatomy* Elementary Biology, Chemistry, and Physics The subjects of the Second Examination are—Anatomy and Physiology The subjects for the *Third Examination* are—Materia Medica and Pharmacy, Pathology Medical Jurisprudence, Public Health, and Pathology and Elementary Bacteriology The subjects of the Fourth Examination are—Medicine Clinical Medicine and Psychological Medicine, Surgery and Clinical Surgery Midwifery and Gynæcology, Therapeutics, and Diseases of the Skin, of the Throat, Nose, and Ear, and of Children

It is required that at least one of the five years of professional education shall be spent in attendance at the University College of Medicine Newcastle upon Tyne Candidates who have passed the First and Second Examinations of the University will be exempt from First and Second Examinations of the Conjoint Board

For the degree of *Bachelor of Surgery* every candidate must have passed the examination for the degree of Bachelor of Medicine of the *University of Durham* and must have attended one course of lectures on Operative Surgery and one course on Applied Anatomy Candidates will be required to perform *operations* on the dead body and to give proof of practical knowledge of the use of surgical instruments and appliances

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age and must satisfy the University as to knowledge of Greek or German If he has not already satisfied the Matriculation Examiners in either Greek or German he must pass in one of these subjects at one of the ordinary matriculation examinations of the Newcastle division of the University He must also have obtained the degree of Bachelor of Surgery of the University of Durham and must have been engaged for at least two years subsequently to the date of acquirement of the degree of Bachelor of Surgery, in attendance on the practice of a recognised hospital, or in the naval or military services, or in medical or surgical practice The candidate for the M D degree must present an essay The subjects of examination for the M S are —Principles and Practice of Surgery, Surgical Pathology, Surgical Anatomy, Surgical Operations Clinical Surgery

Doctor of Medicine (without residence)—The University of Durham has instituted a special examination whereby *the degree* of Doctor of *Medicine may* be obtained without residence Candidates shall not be under 40 years of age and shall have been in active practice for *15 years as registered medical practitioners* They shall produce certificates of moral character from three registered members of the medical profession The fee will be *50 guineas, of which 20 guineas* will be retained if the candidate fails to satisfy the examiners

Candidates for any of the above degrees, diplomas or licence, must give at *least* 28 days' notice to Professor Howden, Secretary, College of Medicine, Newcastle-upon-Tyne In the case of the M D (essay) examination candidates must send in their essays six weeks before the date of the examination

Professors—Principles and Practice of Medicine Sir G H Philipson M D , Dr David Drummond, and Sir T Oliver, M D Psychological Medicine Dr T W McDowall Surgery Mr James Rutherford Morison, Mr Henry Brunton Angus, and Mr G Grey Turner Ophthalmology Mr John Dobson Wardale Midwifery and Diseases of Women and Children Professor R P Ranken Lyle Pathology Professor Stuart McDonald Medical Jurisprudence Professor Robert A. Bolam Public Health Professor Thomas Eustace Hill Therapeutics Professor Thomas Beattie Anatomy Professor Robert Howden , demonstrators, Dr James Dunlop Lickley and Mr E P *Stibbe* Applied Anatomy Mr John Clay Physiology Professor James Acworth Menzies Lecturer Mildred Atkinson Materia Medica and *Pharmacology Professor* W E Hume Comparative Pathology and Bacteriology Professor H J Hutchens , lecturer, Dr F H A. Clayton , demonstrator (*vacant*) , *assistant demonstrator*, Dr George Hall

Scholarships and Prizes—In connexion with this University the following Scholarships and prizes are awarded —(*a*), (*b*), (*c*), and (*d*) Four Scholarships of £25 a year each, tenable for four years , the examination will be the September Matriculation Examination Candidates must take English, Latin, Arithmetic, Euclid, Algebra, Geography, English History, with Greek or German, or both (See College Calendar for special books) Open to candidates desirous of being admitted as Medical Students The successful candidates must take *out* their entire curriculum at the University of Durham College of Medicine, Newcastle upon Tyne (*e*) Pears Scholarship of £50 a year (when vacant), tenable for three years , Matriculation Examination.—At the College of Medicine are (*f*) Dickinson Scholarship interest on £400 and gold medal , examination in Medicine, Surgery Midwifery, and Pathology Open to full students of the College of Medicine who have passed the third M.B Examination (*g*) Tulloch Scholarship, interest on £400 , examination in Elementary Anatomy Biology, Chemistry and Physics (*h*) Charlton Memorial Scholarship, interest on £700 , examination in Medicine. Open to full *students* of the College entered for the class on the Principles and Practice of Medicine (*i*) Gibb Scholarship, interest on £500 , awarded annually *as* a Scholarship in Pathology to full student who passes the best examination in that subject No student is eligible *after completion* of his curriculum (*j*) Luke Armstrong Memorial Scholarship, interest on £680 Original Essay *on some* subject in Comparative Pathology (If no essay *of sufficient* merit be presented the scholarship may be awarded to the candidate who in passing the first part of the Examination for the B Hy Degree, obtains the highest number of marks in Comparative Pathology during the year) Open to all Graduates in Medicine or Hygiene and candidates for these degrees who have spent six months at the University and whose age does not exceed 30 years (*k*) Stephen Scott Scholarship interest on £1000, Original Essay on any Surgical subject Open to any graduate in Medicine or Surgery of the University or any student of the College of Medicine Student s age must not exceed 30 years (*l*) Heath Scholarship, interest on £4000 For 1916 Original Essay on Genito-urinary Tuberculosis Its Etiology, Pathology, Methods of Spread, Prognosis, and Treatment. All Graduates in Medicine or Surgery of the University are eligible. (*m*) Gibson Prize, interest on £250 stock, examination in subject of Midwifery and Diseases of Women and Children. Open to students who have attended one course of lectures on Midwifery and Gynæcology (*n*) Outterson Wood Prize, interest on £250, in Psychological Medicine. (*o*) Turnbull Prize and Medal, examination in Surface Anatomy Open to students at end of their second winter session.—At the Royal Infirmary is (*p*) Goyder Memorial Scholarship, interest on £325, awarded annually to student who most distinguishes himself in Clinical Medicine and Clinical Surgery at the Royal Infirmary For further information apply to Professor Howden Secretary of the College.

Hygiene.—The regulations with regard to the degrees in Sanitary Science will be found under the section on Public Health.

THE COLLEGE OF MEDICINE, Newcastle-upon Tyne.—Clinical instruction is given at the Royal Victoria Infirmary, containing 575 beds In it adequate accommodation is provided for the study of the various special subjects, in addition to the ordinary clinical work.

NEWCASTLE-UPON TYNE ROYAL VICTORIA INFIRMARY.—The Infirmary was founded in 1751, but has been entirely rebuilt the new hospital being opened by His late Majesty King Edward VII in 1906 The number of beds is 575 The number of in patients annually is 9200 and of out-patients 69 000 The medical students of the University of Durham attend the practice of this hospital. Clinical Lectures are delivered by the Physicians and Surgeons weekly and ward demonstrations are given daily Tutorial classes are held by the Assistant Physicians Assistant Surgeons and Surgical Registrars weekly, and demonstrations are given in the several out-patient departments daily Pathological demonstrations are given by the Pathologist daily or as opportunity occurs, and in the new buildings nothing has been spared in perfecting scientific equipment In addition to medical and surgical in patient and out-patient departments the following special departments are fully equipped for teaching students Ophthalmic, Throat, Nose, and Ear Skin, Gynæcological and Electrical The hospital building contains the following laboratories 1. Special Pathological Laboratory, attached to the post-mortem rooms 2. Bacteriological Laboratory, in which all clinical bacteriological investigations are carried out—opsonic indices estimated with a view to treatment by vaccines and serums &c 3 There is in addition a Clinical Laboratory attached to each ward and to the out-patient department There are five operating theatres in use in the hospital The surgical practice is especially good The session opens on April 17th and Oct 2nd of each year Applications for detailed information should be made to the Acting Dean Dr D Wells Patterson, at the hospital

Staff.—Physicians Dr T Beattie Dr W E Hume Dr Horsley Drummond and Dr Alfred Parkin Assistant Physicians Dr George Hall Dr T M Allison, Dr D W Patterson and Dr T C Hunter Surgeons Mr A M Martin Mr H B Angus Mr W G Richardson and Mr J W Leech Assistant Surgeons Mr John Clay, Mr G G Turner and Mr R J Willan Ophthalmic Surgeon Mr J D Wardale Assistant Surgeon Mr T Gowans Throat and Ear Department Surgeon Mr S S Whillis Assistant Surgeon Mr W F Wilson. Gynæcological Department Dr R P R Lyle Skin Department Physician Dr Robert A Bolam Electrical Department Dr W D Arnison Pathologist Dr Stuart McDonald Bacteriologist Dr H J Slade Anæsthetists Dr F G Armstrong, Dr W J Phillips, Dr H H Markham, and Dr W Seymour Medical Registrars Miss H Gurney, Dr J Leslie Wilson, and Dr Glen Davison Surgical Registrars Mr F C Pybus, Mr Hamilton Drummond, Mr Hodgson and Mr Saint

There are other institutions at which the student of medicine of the University of Durham can receive clinical instruction Practical Midwifery can be studied at the Newcastle Lying in Hospital Instruction is given in Psychological Medicine at the Northumberland County Asylum, Morpeth, by Professor T W McDowall, the Superintendent A special course of instruction is given in the City Hospital for Infectious Diseases by the Superintendent, the City Officer of Health, Dr Harold Kerr

NORTHUMBERLAND, DURHAM, AND NEWCASTLE INFIRMARY FOR DISEASES OF THE EYE, St Mary s place, Newcastle-on Tyne.—Consulting Surgeon Dr F Page Staff Surgeons Mr A. S Percival and Mr H P Bennett Matron Miss C E Balfour Secretary Mr Richard Smith, 61, Westgate road, Newcastle-on Tyne Out-patients, 13,000, in patients, 490

UNIVERSITY OF BIRMINGHAM

The University of Birmingham grants the degrees of M B, Ch.B, M D, Ch M, and also a degree and a diploma in Public Health. The course for the Bachelors' degrees extends over five years from the date of commencement of professional study As a rule the first four of these years must be spent in the University, but the Senate has power of recognising attendance at another University as part of the attendance qualifying for these degrees and of recognising examinations passed at such other Universities as exempting from the examinations in Chemistry Physics, and Elementary Biology In the case of such students at least three years must be spent in attendance upon classes at the University The fifth year may be spent at any other school or schools of medicine recognised by the University The students of the Medical Faculty can be members of the University Club the University Athletic Club, and the University Officers' Training Corps, while they possess a guild—the Guild of Undergraduates—which is designed to be a recognised medium of communication between the teachers and the taught The University Medical Society and the Dental Students' Society also offer opportunities of coöperation for mutual benefit

Degrees of Bachelor of Medicine and Bachelor of Surgery.—The student must have passed either the Matriculation Examination of the University or one of the following examinations (see note below) Up to Oct 31st, 1917 the University will recognise any one of the following examinations, in lieu of its own Matriculation in the case of medical students, provided always that such examination shall have included the subjects of Chemistry or Experimental Mechanics or some other branch of Experimental Physics, English, Mathematics, a foreign Language, and *either* another language *or* an additional science, and that all the subjects have been passed at one examination (*a*) the previous examination of the University of Cambridge, (*b*) Responsions of the University of Oxford, (*c*) the Preliminary or Matriculation Examination of a recognised University, (*d*) the (Higher) Certificate of the Oxford and Cambridge Examinations Board, (*e*) the Oxford or Cambridge Senior Local Examination, (*f*) the Senior Certificate of the Central Welsh Board A Matriculation Examination will commence on Sept 12th 1917 (*Note*.—After Oct 31st 1917, all communications respecting the Matriculation Examination and examinations accepted in lieu thereof must be *sent to the* Secretary to the Board Joint Matriculation Board, 24 Dover street Manchester) First Examination.—Chemistry and Physics and Elementary Biology Second Examination.—Anatomy and Physiology Third Examination.—General Pathology and Bacteriology, Materia Medica, and Practical Pharmacy Fourth Examination (at the end of the fourth year).—Forensic Medicine, Toxicology Public Health Therapeutics, and Special Pathology Two years' hospital work must have been accomplished Final Examination.—Medicine Surgery Midwifery Diseases of Women Mental Diseases and Ophthalmology Attendance at a general hospital for a year after the passing of the fourth examination will be required also attendance at a fever hospital three months, maternity hospital

Alcock, B Sc , Miss Leyshon, B Sc , of Practical Pharmacy, Miss Buchanan, M P S

Dean of the School, Miss Aldrich Blake, M D , M S , Honorary Secretary, Dr May Thorne , Warden and Secretary, Miss L M Brooks

Scholarships and Prizes —(*a*) Isabel Thorne Scholarship, £30 (*b*) St Dunstan's Medical Exhibition, £60 a year tenable for three or five years (*c*) Mrs George M Smith Scholarship, £50 a year tenable for three or five years and next to be awarded in 1919 (*d*) Bostock Scholarship, tenable for two or four years, and next to be awarded in June, 1919 £60 (*e*) Mabel Sharman Crawford Scholarship, tenable for four years, £20 a year (*f*) Mabel Webb Research Scholarship, tenable for one year and renewable, £30, Physiology, Chemistry, or Pathology (*g*) Fanny Butler Scholarship, tenable for four years , next award in July, 1918, £14 10*s* (*h*) John Byron Bursary, tenable from two to four years, for students already in the School requiring assistance for the prosecution of their medical studies, application to the Secretary by March 31st , next award in March, 1919, £20 (*i*) Ellen Walker Bursary tenable for two years, awarded to a student beginning fourth year of medical study, £25 a year (*k*) Helen Prideaux Scholarship, awarded every second year to a student who has become qualified during the two years immediately preceding the award, and to be spent in assisting the holder to further study, £40 (*l*) Agnes Guthrie Bursary, value £60, is offered annually to students who desire to pursue a full course of study for the Licentiateship in Dental Surgery (*m*) Dr Edith Pechey Phipson Post-graduate Scholarship of the value of £40, awarded annually in June It is open to all medical women, preferably coming from India, or going to work in India, for assistance in Post-graduate study (*n*) Sarah Holborn Scholarship, value £20 a year for three or five years, awarded every alternate year , next award in 1919 Two Richardson Kuhlmann Prizes are given each year, value £12 for proficiency in Clinical Obstetrics, value £8, for proficiency in senior subjects respectively Two Evans Prizes of £2 2*s* and £1 1*s* are given each year on the results of the class examination in Midwifery The Evans Prize for Operative Midwifery, value £5 5*s* , is awarded yearly The Edith Pechey Phipson Prize in Pharmacology, value £3 3*s* , is awarded annually There is also a small loan fund from which assistance can occasionally be given to students and to graduates who specially require pecuniary help Prizes and Certificates of Honour are awarded in each class at the end of the session

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UNIVERSITY OF DURHAM

Two Diplomas, one Licence, and six degrees are conferred —viz , the Diploma in Public Health, Diploma in Psychiatry, the Licence in Dental Surgery and the degrees of Bachelor of Medicine, Bachelor of Surgery, Master of Surgery, Doctor of Medicine, Bachelor of Hygiene, and Doctor of Hygiene

For the degree of *Bachelor of Medicine* there are four professional examinations The subjects of the First Examination are—Elementary Anatomy Elementary Biology, Chemistry, and Physics The subjects of the Second Examination are—Anatomy and Physiology The subjects for the Third Examination are—Materia Medica and Pharmacy, Pathology Medical Jurisprudence, Public Health, and Pathology and Elementary Bacteriology The subjects of the Fourth Examination are—Medicine Clinical Medicine and Psychological Medicine, Surgery and Clinical Surgery Midwifery and Gynæcology, Therapeutics, and Diseases of the Skin, of the Throat, Nose, and Ear, and of Children

It is required that at least one of the five years of professional education shall be spent in attendance at the University College of Medicine Newcastle upon Tyne Candidates who have passed the First and Second Examinations of the University will be exempt from First and Second Examinations of the Conjoint Board

For the degree of *Bachelor of Surgery* every candidate must have passed the examination for the degree of Bachelor of Medicine of the University of Durham and must have attended one course of lectures on Operative Surgery and one course on Applied Anatomy Candidates will be required to perform operations on the dead body and to give proof of practical knowledge of the use of surgical instruments and appliances

For the degrees of *Doctor of Medicine* and *Master of Surgery* a candidate must not be less than 24 years of age and must satisfy the University as to knowledge of Greek or German If he has not already satisfied the Matriculation Examiners in either Greek or German he must pass in one of these subjects at one of the ordinary matriculation examinations of the Newcastle division of the University He must also have obtained the degree of Bachelor of Surgery of the University of Durham and must have been engaged for at least two years subsequently to the date of acquirement of the degree of Bachelor of Surgery, in attendance on the practice of a recognised hospital, or in the naval or military services, or in medical or surgical practice The candidate for the M D degree must present an essay The subjects of examination for the M S are —Principles and Practice of Surgery, Surgical Pathology, Surgical Anatomy, Surgical Operations, Clinical Surgery

Doctor of Medicine (without residence) —The University of Durham has instituted a special examination whereby the degree of Doctor of Medicine may be obtained without residence Candidates shall not be under 40 years of age and shall have been in active practice for 15 years as registered medical practitioners They shall produce certificates of moral character from three registered members of the medical profession The fee will be 50 guineas, of which 20 guineas will be retained if the candidate fails to satisfy the examiners

Candidates for any of the above degrees, diplomas or licence, must give at least 28 days' notice to Professor Howden, Secretary, College of Medicine, Newcastle-upon-Tyne In the case of the M D (essay) examination candidates must send in their essays six weeks before the date of the examination

Professors—Principles and Practice of Medicine Sir G H. Philipson M D , Dr David Drummond and Sir T Oliver, M D Psychological Medicine Dr T W McDowall. Surgery Mr James Rutherford Morison, Mr Henry Brunton Angus, and Mr G Grey Turner Ophthalmology Mr John Dobson Wardale Midwifery and Diseases of Women and Children Professor R P Ranken Lyle Pathology Professor Stuart McDonald Medical Jurisprudence Professor Robert A. Bolam Public Health Professor Thomas Eustace Hill Therapeutics Professor Thomas Beattie. *Anatomy Professor Robert* Howden , demonstrators, Dr James Dunlop Lickley and Mr E P Stibbe. Applied Anatomy Mr John Clay Physiology Professor James Acworth Menzies Lecturer Mildred Atkinson. Materia Medica and Pharmacology Professor W E Hume. Comparative Pathology and Bacteriology Professor H. J Hutchens , lecturer, Dr F H A. Clayton , demonstrator (vacant) , assistant demonstrator, Dr George Hall.

Scholarships and Prizes —In connexion with this University the following Scholarships and prizes are awarded —(*a*), (*b*), (*c*), and (*d*) Four Scholarships of £25 a year each, tenable for four years , the examination will be the September Matriculation Examination Candidates must take English, Latin, Arithmetic, Euclid, Algebra, Geography, English History, with Greek or German, or both (See College Calendar for special books) Open to candidates desirous of being admitted as Medical Students The successful candidates must take out their entire curriculum at the University of Durham College of Medicine, Newcastle upon Tyne (*e*) Pears Scholarship of £50 a year (when vacant), tenable for three years, Matriculation Examination.—At the College of Medicine are (*f*) Dickinson Scholarship interest on £400 and gold medal , examination in Medicine, Surgery, Midwifery, and Pathology Open to full students of the College of Medicine who have passed the third M B Examination (*g*) Tulloch Scholarship, interest on £400 , examination in Elementary Anatomy, Biology, Chemistry and Physics (*h*) Charlton Memorial Scholarship interest on £700 , examination in Medicine. Open to full students of the College entered for the class on the Principles and Practice of Medicine (*i*) Gibb Scholarship interest on £500 , awarded annually as a Scholarship in Pathology to full student who passes the best examination in that subject No student is eligible after completion of his curriculum (*j*) Luke Armstrong Memorial Scholarship, interest on £680 Original Essay on some subject in Comparative Pathology (If no essay of sufficient merit be presented the scholarship may be awarded to the candidate

Mr Frank Marsh and Mr Bennett May Consulting Ophthalmic Surgeon Mr Priestley Smith Physicians Dr O J Kauffmann, Dr Douglas Stanley, and Dr J G Emanuel. Surgeons Mr J T J Morrison, Mr C A. Leedham Green, and Mr W Billington Obstetric Officer Dr C E Purslow Ophthalmic Surgeon Mr Wilfrid Allport. Physicians for Out-patients Dr L G J Mackey and Dr L Ball. Surgeons for Out-patients Mr A. W Nuthall, Mr B J Ward, and Mr Bertram A. Lloyd. Pathologist Dr L. Ball. Radiographer Dr Harold Black. Anæsthetist Mr L Kirkby Thomas

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church street, Birmingham —Honorary Consulting Physician Dr R. Saundby Honorary Consulting General Surgeon Mr George Heaton. Honorary Consulting Surgeon Mr D C Lloyd Owen. Surgeons Mr E. W Wood White, Mr J Jameson Evans, and Mr W H. Fulford Eales Assistant Surgeons Mr T Harrison Butler and Mr R Beatson-Hird Dental Surgeon Mr John Westwood Anæsthetist Dr S W Haynes Radiographers Mr Hall Edwards and Mr Emrys-Jones Pathologist Dr E. W Assinder This hospital possesses 108 beds and there is an average daily attendance of out-patients of over 250 This institution is recognised by Universities and the Royal College of Surgeons, England, and Royal College of Physicians, London, as an ophthalmic hospital at which clinical instruction in ophthalmology may be received. Students attending for a period of three months will be granted certificates which will qualify for the University and Conjoint Board examinations

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UNIVERSITY OF LIVERPOOL

The degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M B and Ch.B), Doctor of Medicine (M D) Master of Surgery (Ch.M), and Master of Hygiene (M H.)

Degrees of Bachelor of Medicine and Bachelor of Surgery —Candidates for the degrees of Bachelor of Medicine and of Surgery must have attained the age of 21 years on the day of graduation. At least two of the five years of medical study must have been passed in the University, and one year at least must have been passed in the University subsequently to the date of passing the First Examination. The other three years may be passed at any college or medical school recognised for this purpose by the University Candidates must pass three examinations entitled respectively the First Examination the Second Examination, and the Final Examination. The fee is £5 for each examination. The subjects of the First Examination are (1) Chemistry Inorganic, Organic, and Physical , (2) Biology (Zoology and Botany), and (3) Physics. The examination is divided into two parts—namely, (1) Chemistry and Physics, and (2) Biology, and candidates may present themselves in these parts separately The subjects of the Second Examination are (*a*) Anatomy and Physiology (including Physiological Chemistry and Histology), and (*b*) Materia Medica, Pharmacy, and Pharmacology Candidates may present themselves in (*a*) or (*b*) separately The subjects for the Final Examination are (1) General Pathology and Morbid Anatomy , (2) Therapeutics , (3) Forensic Medicine and Toxicology , (4) Public Health , (5) Obstetrics and Diseases of Women , (6) Surgery Systematic, Clinical Operative, and Practical, including Ophthalmology , and (7) Medicine, Systematic and Clinical, including Mental Diseases and Diseases of Children. The Final Examination is divided into three parts, the first consisting of subject (1) the second of subjects (2) (3), and (4), the third of subjects (5) (6) and (7) Candidates may present themselves in these parts separately Candidates for the third part must have completed the fifth year of medical study

Degrees of Doctor of Medicine and Master of Surgery —No candidate will be admitted to the degree of Doctor of Medicine or Master of Surgery unless he has previously received the Degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since he passed the examinations for those degrees Candidates for the degree of Doctor of Medicine are required to present a dissertation embodying the results of personal observations or original research either in some department of medicine or of some science directly relative to medicine provided always that original work published in scientific journals or separately shall be admissible in lieu of, or in addition to, a dissertation specially written for the degree

Professors—Inorganic Chemistry E C C Baly, F R S Physical Chemistry W C. McC Lewis, M.A., D Sc Organic Chemistry R Robinson, D Sc Physiology J S Macdonald, B.A. Physics L. R Wilberforce, M A. Natural History W A. Herdman, D Sc , F R S Botany R J H. Gibson, M A. Anatomy A. Melville Paterson, M D Medicine T Robinson Glynn, M.D Surgery Rushton Parker, F R C.S Regional Surgery W Thelwall Thomas, Ch.M., F R.C.S Pathology Ernest Glynn, M D Midwifery and Gynæcology H Briggs, M D Therapeutics J H. Abram, M.D Hygiene E. W Hope, D Sc. Forensic Medicine R. J M Buchanan, M D Tropical Medicine J W W Stephens, M D Tropical Sanitation Major Sir Ronald Ross, F R.S Bio Chemistry W Ramsden, D M. Entomology R. Newstead, M Sc., A.L S F R.S Bacteriology J M Beattie, M A., M D Parasitology Warrington Yorke M.D

At this University the following Scholarships and Fellowships and Prizes are awarded —(*a*) and (*b*) Robert Gee Entrance Scholarships, two annually, of £25 each, tenable for two years, Joint Matriculation Board Examination held in July, open to First M B Course Students , (*c*) Lyon Jones Scholarship, No 1 of £21 per annum, tenable for two years, Competitive Examination among Junior Students in First M B Subjects, Perpetual Course at the University , (*d*) Lyon Jones Scholarship, No 2 of £21, Competitive Examination among Senior Students in Anatomy, Physiology, Pharmacology, and Materia Medica , (*e*) Derby Exhibition of £15, Competitive Examination among Fourth- or Fifth year Students in Clinical Subjects, and Clinical School Exhibition of £15 annually for Fourth- or Fifth-year students , (*f*) University Scholarship of £25 for one year, awarded on results of Second Examination for the degrees , (*g*) Holt Fellowships Physiology and Pathology of £100 each, for one year , (*h*) Gee Fellowship, Anatomy, of £100, for one year , (*i*) Alexander Fellowship, Bacteriology and Pathology, of £100, for one year , (*j*) Johnston Colonial Fellowship, Bio-Chemistry, of £100 for one year , (*k*) John W Garrett International Fellowship, Bacteriology, of £100, for one year , (*l*) Thelwall Thomas Fellowship Surgical Pathology, of £100, for one year , (*m*) Ethel Boyce Fellowship in Gynæcological Pathology, of £100, for one year , numerous prizes and medals

Medical School Buildings —Medical research has also been endowed with several new laboratories in which students can pursue research work after graduation. All the laboratories and class-rooms are situated close together, communicating with one another and are made up of four large blocks of buildings which form one side of the College quadrangle. There are the Johnston Laboratories for Experimental Medicine, Bio-Chemistry, and Tropical Medicine , the Medical School for Anatomy Surgery, Toxicology, and Ophthalmology , and the Thompson-Yates Laboratories for Physiology and Pathology

Clinical Instruction —The Clinical School of the University now consists of four general hospitals—the Royal Infirmary, the David Lewis Northern Hospital, the Royal Southern Hospital, and the Stanley Hospital , and of five special hospitals —the Eye and Ear Infirmary, the Hospital for Women the Infirmary for Children, St Paul s Eye Hospital, and St. George s Hospital for Skin Diseases These hospitals contain in all a total of about 1134 beds. The organisation of these hospitals to form one teaching institution provides the medical student and the medical practitioner with a field for clinical education and study which is unrivalled in extent in the United Kingdom All the hospitals are within easy access of the University There are a large number of appointments to house physicianships and surgeonships both at the general and special hospitals which are open to qualified students of the school.

School of Veterinary Science —There is a school of Veterinary Science in connexion with the University which provides full courses of instruction for the M R C V S Degrees of B V Sc., M V Sc., and D V Sc , together with a diploma in Veterinary Hygiene, are also granted by the University

Public Health Department —This is located in a separate building known as Ashton Hall, in which full courses of instruction are given to students for the Diplomas and Degrees of the University and of other Examining Boards one month, and lunatic asylum three months Vaccination instruction must be taken out and courses of Ophthalmology, Medical and Surgical Anatomy, and Operative Surgery

Degrees of Doctor of Medicine and Master of Surgery —At the end of one year from the date of having passed the final M B , Ch B examination the candidate will be eligible to present himself for the higher degrees of either Doctor of Medicine or Master of Surgery or both

Candidates for either of these degrees have to present a thesis embodying observations in some subject embraced in one of the departments of the medical curriculum, and in addition pass a general examination in Principles and Practice of Medicine for the M D , and general examination in Principles and Practice of Surgery, including operations on the cadaver for the M Ch It will be in the power of the Board of Examiners to exempt from the practical parts of the examination a candidate whose thesis is of exceptional merit from any part of these examinations

Fees —Matriculation, £2 , First Examination, £2 , Second Examination, £2 , Third Examination, £2 , Fourth Examination £2 , Final Examination, £8 , M D or Ch M , £10

Professors—Physics Acting Professor G A Shakespeare, M A , D Sc Chemistry P F Frankland, Ph D , F R.S Elementary Biology F W Gamble, D Sc , F R S Medicine Otto J Kauffmann, M D , and J W Russell, M D Surgery Wm F Haslam, M B , F R C S , and Charles Leedham Green, M B , Ch M , F R C S Anatomy Peter Thompson, M D (Dean of the Medical Faculty) Physiology E W Wace Carlier, M D Therapeutics Douglas Stanley, M D Forensic Medicine J T J Morrison, F R C S Hygiene and Public Health A. Bostock Hill, M D Midwifery and Diseases of Women Thomas Wilson, M D , F R C S Pathology R F C Leith, F R.C P Edin Lecturers—Lunacy and Mental Disease P T Hughes Ophthalmology J Jameson Evans, F R C S Operative Surgery Geo Heaton, F R C S Infant Hygiene and Children's Diseases L G Parsons, M D

At the University of Birmingham the following Scholarships are awarded —(*a*) Myers Travelling Studentship of £150, tenable for one year, awarded by vote of committee to M B , Ch B Birm., B Sc candidates, tenable at some University or Hospital not in Great Britain or Ireland , (*b*) Ingleby Scholarship of £10, awarded to the candidate at Final Examination obtaining highest "first-class" marks in the subjects of Midwifery and Diseases of Women , (*c*) Sydenham Scholarship of £42, tenable for three years, award of Council to orphan sons of medical practitioners , (*d*) Sands Cox Scholarship of £42, tenable for three years, awarded to the candidate, not being more than 19 years of age, taking the highest marks at the July Matriculation , (*e*) Dental Scholarship of £37 10*s* , Open Competitive Examination in subjects learned during apprenticeship , (*f*), (*g*), (*h*), and (*i*) Four Queen's Scholarships of £10 10*s* each In the Second and Fourth Examinations the Scholarship is awarded respectively to the student taking the first place and obtaining "first-class" marks In the Third Examination the Scholarship is awarded to the student obtaining the highest "first-class" marks in Pathology and Bacteriology, provided that such student passes at the same examination in the subjects of Materia Medica and Practical Pharmacy In the Final Examination the Scholarship is awarded to the candidate taking the first place in the examination—that is, obtaining the greatest aggregate number of marks—provided that in each of the subjects of Medicine Surgery, and Midwifery he gains not less than 60 per cent of the total available marks , (*j*) George Henry Marshall Scholarship of £10, awarded annually, for the encouragement of Research Work in Ophthalmology, and (*k*) Russell Memorial Prize, a prize of books, value about £2, awarded annually to the student who, not being of more than six years' standing as a student of the School of Medicine of the University, shall pass the best examination in the subject of Nervous Diseases

Clinical Instruction —The medical students of the University receive their clinical instruction by attending the amalgamated practice of the General Hospital and the Queen's Hospital details of which follow

The clinical instruction of the Birmingham medical students is carried on under the direction of the University Clinical Board The hospitals present an excellent field for clinical work, possessing more than 500 beds, treating annually over 8000 in patients and 100,000 out-patients The students spend part of their curriculum in each hospital, and thus have every opportunity of acquiring a varied, full, and practical knowledge of their professional work. The curriculum is adapted in the first place to meet the needs of the students of the University of Birmingham, but it is also well adapted to the requirements of students preparing for the examinations of all other universities and licensing bodies. At the General Hospital there are open to the students the following appointments A resident medical officer, elected annually (£100), a resident surgical officer, elected annually and eligible for re election for three years (£100) , a resident pathologist, elected for six months (£50) , three surgical casualty officers, elected annually and eligible for re-election (£50) , three house physicians and four house surgeons hold office for six months, receiving board, residence, and salaries at the rate of £50 a year , two house surgeons to the gynæcological, ophthalmic, and aural departments are elected every six months, receiving board, residence, and a salary of £50 a year , two assistant house surgeons are elected every three months, receiving board, residence, and salaries at the rate of £40 a year , a resident medical officer at the Jaffray Hospital, who is elected annually but is eligible for re-election, and who receives £150 a year , and a resident medical assistant at this hospital, who is not necessarily qualified, is provided with board and residence, and holds office for three months. At the Queen's Hospital there are open to the student the following appointments Three house physicians, three house surgeons, and one obstetric and ophthalmic house surgeon, who hold office for six months and have salaries at the rate of £80 a year Thirty eight other appointments of varying value are at the City Workhouse and Workhouse Infirmary, at the Birmingham General and Branch Dispensaries, at the Birmingham Lunatic Asylums, at the City Fever Hospitals at the Children's Hospital, at the Birmingham and Midland Eye Hospital, at the Orthopædic and Spinal Hospital, at the Maternity Hospital, and at the Ear and Throat Hospital

THE BIRMINGHAM GENERAL HOSPITAL.—380 beds (280 for civilian patients and 100 for military patients) are in daily use, 5560 in patients per annum. Special wards for children, gynæcological, septic and infectious cases , special beds for eye, ear, and skin cases. About 50,000 out-patients per annum Laboratories for bacteriology and morbid histology Separate rooms adjoin the medical and surgical wards for clinical pathology Five operating theatres (one for out-patients), all designed and fitted on the most modern lines In addition to clinical teaching given in the wards and out-patient department by the honorary staff, medical and surgical tutorial classes are held for senior and junior students Clinical instruction in all the special departments. The Jaffray Branch Hospital contains 54 beds Consulting Surgeon Mr Gilbert Barling

Staff —Consulting Physician Dr Robert Saundby Consulting Obstetric Officer Dr Edward Malins Physicians Dr T Stacey Wilson, Dr T Sydney Short, Dr J W Russell, Dr A Stanley Barnes, and Dr W H. Wynn Surgeons Mr William F Haslam Mr George Heaton, Mr A Lucas, Mr Leonard P Gamgee, and Mr Frank Barnes Obstetric Physician Dr Thomas Wilson Aural Surgeon and Laryngologist (Vacant). Physician in Charge of Skin Department Dr A Douglas Heath Ophthalmic Surgeon Dr R Beatson Hird. Assistant Physicians Dr J E H Sawyer, Dr L G Parsons and Dr K D Wilkinson Assistant Surgeons Mr Seymour Barling, Mr E Musgrave Woodman, Mr H H Sampson, and Mr G P Mills Assistant Obstetric Officer Mr H B Whitehouse Anæsthetists Dr Sydney Haynes, Dr W J McCardie, and Mr R H R Whitaker Surgical Photographer and Radiographer Mr J Hall Edwards. Dental Surgeon Mr R H Astbury

THE QUEEN S HOSPITAL —Similar arrangements for clinical teaching are made here, and the material also is excellent. Ward and tutorial classes are regularly conducted by the staff, there are daily clinics in the out-patient department, while teaching duties are definitely assigned to the house physicians and house surgeons There are also special departments for gynæcology and ophthalmology

Staff —Consulting Physicians Sir James Sawyer, Dr O W Suckling, and Dr A. H Carter Consulting Surgeons awarded on the results of the Final Examination in Surgery in the Summer Term, £15 The Leech Fellowship (£100) is for the encouragement of study and research, and is open to persons who have graduated M B, Ch B, in the University not more than 18 months previously The Honorary Research Fellowships, tenable for two years, conferring the right of free use of the laboratories are awarded generally in October on application, with evidence of capacity for independent investigation

There are many entrance scholarships, the examinations for which are held in the month of May Full particulars can be obtained from the Dean

The Medical School —This medical school is located in a large building, which forms a part of the University It is provided with large dissecting rooms, physiological laboratories private laboratories, and work rooms, besides lecture rooms, a museum, and a library In order to give the fullest possible opportunities for teaching and investigation in the departments of Anatomy Physiology, Pathology, and Materia Medica, a large extension of the school buildings was made in 1895 A special laboratory, under the charge of Dr T Graham Brown is equipped for experimental work on the central nervous system. In the pathological laboratories ample provision is made for the teaching of pathology and bacteriology and for the prosecution of original research. The Helen Swindells Laboratory, under the charge of Dr Powell White, is specially equipped for cancer research and investigation in general pathology In the public health department, which is lodged in a separate institute in York Place, near the Royal Infirmary, suitable laboratory accommodation is provided for the study of sanitary chemistry, physics and practical bacteriology in the departments of chemistry and physics and in that of pathology

Clinical Studies —The clinical and practical departments of medical study are taught partly in the Medical School and partly in the Royal Infirmary and St Mary s Hospitals for Women and Children, as well as in a fever hospital, a lunatic asylum and a convalescent home Medical and Surgical Clinical Classes are conducted in the Infirmary, which together with the associated hospitals at Cheadle contains 1158 beds, and separate instruction is afforded in the elements of Medical and Surgical Physical Diagnosis in Obstetric Medicine Ophthalmic Surgery and Pathological Anatomy by the different members of the staff of the Medical School and Infirmary

Clinical Instruction —THE MANCHESTER ROYAL INFIRMARY —The Royal Infirmary is built on the pavilion system, near the University and has accommodation for 838 (including 516 temporary military beds). The remaining beds are allocated to civilians The medical side consists of five units, each unit having a testing room for the scientific investigation of morbid products and a class room The surgical beds are also arranged in five units each unit having its own operation theatre with anæsthetising, recovery sterilising testing, and apparatus rooms and its own class-room attached. Of these units all are occupied The fine educational block provides very handsomely for the wants and comforts of the students, there being separate suites of rooms for the men and the women and also a large common reading room a lecture theatre and a museum The present annual average number of in patients is 12,000 of out- and home patients 32 000, and the list of casualties in the accident room has averaged 22 000 per annum. About 8000 operations are performed annually in the operation theatres Associated with the infirmary are (1) the Convalescent Hospital at Cheadle containing 136 beds, (2) the Royal Lunatic Hospital at Cheadle, accommodating with its branches 430 patients, and (3) the Central Branch in the city for casualty and out-patient work and 62 temporary military beds The Associated Hospitals thus contain 1404 beds and are under the same management Women students are admitted to the practice of the Infirmary on the same terms as men

Fees —Medical Practice Three months, 5 guineas, six months 8 guineas, 12 months 12 guineas, full period required by the Examining Boards 42 guineas

Two Entrance Scholarships in Medicine of the value of £100 each are offered annually by the Council of the Manchester University and the Medical Board of the Manchester Royal Infirmary for proficiency in Arts and Science subjects respectively Other scholarships and prizes are in the College Syllabus Numerous annual appointments and junior appointments may be held by those who have attended the practice of the Infirmary

Staff —Consulting Physicians Dr Graham Steell, Dr Judson S Bury, Dr A. T Wilkinson, and Dr R T Williamson Physicians Dr E S Reynolds, Dr G R Murray, Dr E M Brockbank, Dr E N Cunliffe, and Dr F Craven Moore Assistant Physicians Dr A Ramsbottom, Dr E B Leech, Dr F E Tylecote, Dr C E Melland, and Dr D E Core Honorary Pathologists Dr H R Dean and Dr W B Anderton Consulting Surgeons Mr F A. Southam and Mr G A Wright Surgeons Mr W Thorburn, Mr J W Smith Mr A H. Burgess, Mr J H. Ray, and Mr E D Telford Assistant Surgeons Mr C Roberts Mr P R Wrigley, Mr H H Rayner, Mr W H Hey, and Mr J P Buckley Anæsthetist Mr Alexander Wilson Consulting Obstetric Physician Dr Lloyd Roberts Gynæcological Surgeon Dr A. Donald Assistant Gynæcological Surgeon Dr W E Fothergill Ophthalmic Surgeon Dr A. Hill Griffith Aural Surgeon Sir William Milligan Assistant Aural Surgeon Mr F H Westmacott Consulting Dental Surgeon Mr W A. Hooton Dental Surgeon Mr E G Long Dean Dr E M Brockbank Resident Medical Officer Dr A. Burrows Resident Surgical Officer Mr John Gow Pathological Registrar Dr W B Anderton Medical Registrar Dr D T Harris Surgical Registrar Mr Howard Buck Director of the Clinical Laboratory Dr G E Loveday Anæsthetists Mr S R Wilson, Mr Edward Moir, Mr E Falkner Hill, Mr T Coogan, Mr G M Benton, and Miss Mabel E May Assistant Medical Officers Dr C E Lea and Dr J F Ward Acting Assistant Medical Officers Dr J S B Stopford and Dr W T Reid Assistant Surgical Officers Mr W R Douglas and Mr Howard Buck. Surgical Tutor Mr W R Douglas Medical Officer for Home Patients Dr George Ashton Medical Officer for Radiography and Electricity Department Dr A E Barclay Resident Medical Officer of the Convalescent Hospital Cheadle Mr C R Sandiford Resident Superintendent of the Royal Lunatic Hospital at Cheadle Mr W Scowcroft. Medical Officer, Central Branch Mr Alan Barrett General Superintendent and Secretary Mr F G Hazell

MANCHESTER CHILDREN S HOSPITAL Pendlebury, Gartside street Manchester and St Anne s-on the Sea.—The hospital contains 188 beds and 24 in the Convalescent Home, St Anne s-on the Sea The medical staff visit the hospital daily at 10 A M Clinical instruction is given by the medical staff at the Hospital and Dispensary Out-patients are seen daily at 9 A M at the new Out-patient Department, Gartside-street Manchester Physicians Dr Heywood, Dr Lapage, and Dr Ashby Surgeons Mr C Roberts Mr H H Rayner and Mr John Morley Honorary Consulting Surgeons Mr G A Wright and Mr J Howson Ray Honorary Consulting Aural Surgeon Mr F H Westmacott Surgeon for Throat, Nose and Ear Diseases Mr Arnold Jones Honorary Ophthalmic Surgeon Dr J Gray Clegg Pathologist Mr A H Miller Anæsthetists Mr E Moir and Mr S R. Wilson Honorary Dental Surgeon Mr E A T Green Medical Officers at the Dispensary Mr K. B Pinson and Mr A W Walsh Medical Officer, X Ray Department Dr W J S Bythell. During 1916 there were 2539 in patients, and 21,255 new out-patients were under treatment at the Dispensary and there were 86 612 attendances made by out-patients Secretary Mr W M Humphry

THE MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN Park place Cheetham Hill road, Manchester —The hospital contains 70 beds Out patients are seen daily from 8 30 to 10 A M Honorary Consulting Physicians Dr W N Maccall Dr T C Railton, and Dr J J Cox. Honorary Consulting Surgeon Mr Frederick A. Southam Honorary Physician for Women Dr T Arthur Helme. Honorary Surgeon for Women Dr G W Fitz Gerald Honorary Physicians for Children Dr A. A Mumford, Dr A. C Sturrock and Dr C Chisholm Honorary Assistant Surgeon for Women Dr D Dougal. Honorary Surgeon for Children Dr R Ollerenshaw Honorary Ophthalmic Surgeon Dr H H McNabb Honorary Anæsthetists Mr G A Barrow Dr C H Lee, and Dr D H. Paul Honorary Clinical Pathologist Dr J Staveley-Dick Pathologist Dr A. H. Miller Assistant Medical Officer Mr R W Walsh House Surgeon (Temporarily filled)

Special Diplomas —The University has instituted diplomas in *Anatomy, Bacteriology, Bio chemistry, and Parasitology* A special course of study of three terms' duration is required in the subject chosen for the diploma and allied subjects

Prospectuses and further information may be had on application to the Dean of the Faculty of Medicine, University of Liverpool

Staff of the Royal Infirmary —Consulting Physicians Dr T R Glynn, Dr R Caton, and Sir James Barr Physicians Dr T R Bradshaw, Dr J Hill Abram, and Dr R. J M Buchanan *Assistant Physicians Dr John Hay* and Dr W Barnett Warrington Consulting Surgeons Mr Rushton Parker and Mr F T Paul Surgeons Mr R A Bickersteth, Mr W Thelwall *Thomas, and Mr Litler Jones* Assistant Surgeons Mr R E Kelly Mr F A. G Jeans, and Mr H F Woolfenden Consulting Gynæcological Surgeon Mr T B Grimsdale Gynæcological Surgeon Mr W Blair Bell Ophthalmic Surgeon Mr T H Bickerton Surgeon to the Throat Department Mr Thomas Guthrie Physician to the Skin Department Dr L Roberts Lock Department Dr F P Wilson X Ray and Radium Departments Dr O Thurstan Holland Dental Surgeon Dr S Hallam Chemical Pathologist Dr Walter Ramsden Pathologist Dr E E Glynn Anæsthetists Mr W Fingland, Mr F W Bailey, Mr H Armstrong, Mr A J O'Leary, Dr Mona Roberts Mr Bennett Jones, and Mr G F R Smith

Staff of the David Lewis Northern Hospital —Physician Dr John Owen Assistant Physician Dr J M Bligh Surgeons Mr K W Monsarrat and Mr G O E Simpson Assistant Surgeons Mr J H Rawlinson and Mr T P McMurray Consulting Neurologist Dr W B Warrington Consulting Gynæcological Surgeon Mr H Leith Murray Consulting Aural Surgeon and Laryngologist Dr Hugh E Jones Consulting Dental Surgeon Mr Leslie Councell Surgeon in Charge of Orthopædics and Massage Dr W H Broad Anæsthetists Dr Robert Stevenson, Dr H J Knox, Dr W R Pearce, and Mr A. J W Cunningham Pathologist Dr H S Pemberton Medical Officer in Charge of Finsen Light and Roentgen Ray Department Dr W C Oram Bacteriologist Dr L S Ashcroft

Women are now accepted for resident appointments

Staff of the Royal Southern Hospital —Consulting Physician Dr W Williams Consulting Surgeon Mr W Alexander Consulting Bacteriologist *Professor* J M Beattie Honorary Physicians Dr C J Macalister and Dr J L Roberts Honorary Surgeons Sir R Jones, *Mr G P* Newbolt, and Mr *Douglas-Crawford* Honorary Assistant Surgeons Mr T R W Armour and Mr O H Williams Honorary Dermatologist Dr F H Barendt. Honorary Ophthalmic Surgeon Mr R J *Hamilton* Honorary Laryngologist Dr W Permewan Honorary Assistant Laryngologist Dr W Sanderson Radiologist Dr D Morgan *Honorary Dental Surgeon* Mr L Osborn Anæsthetists Dr F M Gardner Medwin Dr W J Bennett Jones, Dr G F R Smith, and Dr T E Jones

Staff of the Stanley Hospital —Consulting Physicians Dr R I Richardson and Dr W Whitford Physician Dr A G Gullan Surgeons Mr F O Larkin and Mr A J Evans Gynæcology Miss F Ivens, M B, M S Ophthalmic Physician Dr J Grimshaw Laryngologist Dr J E McDougall Dentist Mr J Woodford Williams

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THE VICTORIA UNIVERSITY OF MANCHESTER

Four degrees in Medicine and Surgery are conferred by the University—viz , Bachelor of Medicine and Bachelor of Surgery (M B and Ch B), Doctor of Medicine (M D), and Master of Surgery (Ch M) A Diploma in Psychological Medicine is awarded by examination to *registered* medical practitioners

Degrees of Bachelor of Medicine and Bachelor of Surgery —Before admission *to the degree of M B or Ch B* candidates are required to present certificates that they will have attained the age of 21 years on the day of graduation and *that* they have pursued the courses of study required by the University Regulations during a period of not less than five years subsequently to the date of their registration by the General Medical Council, two of such years having been passed in the University and one year at least having been passed in the University subsequently to the date of passing the first M B Examination All candidates for the degrees of Bachelor of Medicine and *Bachelor* of Surgery are required to satisfy the examiners in the several subjects of the following examinations the First Examination, the Second Examination, the Third Examination, and the Final Examination.

The First Examination —The subjects of examination are as follows —(1) Inorganic Chemistry and Physics, (2) Biology, and (3) Elementary Organic Chemistry and Bio-Chemistry Candidates must have attended during at least one year courses both of lectures and of laboratory work *in each of the above named subjects* The Examination is divided into three parts Part 1, Inorganic Chemistry and Physics, Part 2, Biology, Part 3, Elementary *Organic Chemistry and Bio Chemistry, and the candidates* may pass in these parts separately under certain conditions

The Second Examination —The subjects of examination are as follows —(1) Anatomy, (2) Physiology, including Physiological Chemistry and Histology Candidates may pass in (1) and (2) separately under certain conditions

The Third Examination —(1) Pathology, (2) Pharmacology and Therapeutics, (3) Hygiene These subjects may be taken separately under certain conditions.

The Final Examination —The subjects of examination are as follows —(1) Medicine, Systematic and Clinical (including Mental Diseases and Diseases of Children), (2) Surgery, Systematic, Clinical, and Practical, (3) Obstetrics and Gynæcology (including Clinical and Practical), (4) Forensic Medicine (including an Oral Examination) These subjects may be taken separately under certain conditions

Candidates for the Final Examination must have completed the fifth year of medical study

Degree of Doctor of Medicine —Candidates are not eligible for the degree of Doctor of Medicine unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees Candidates may elect either (1) to present an original dissertation, or (2) to undergo an examination The dissertation must embody the results of personal observation or original research, either in some department of medicine or of some science directly relative to medicine The examination, which will be partly written, partly practical, is in the Principles and Practice of Medicine, in Pathology, and in some other subject to be selected by the candidate

Degree of Master of Surgery —Candidates are not eligible *for the degree of Master of Surgery* unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed *since they passed the examination* for those degrees The subjects of examination are as follows (1) Surgical Anatomy, (2) Surgery, (3) Operative Surgery, (4) Clinical Surgery, (5) Ophthalmology, and (6) Pathology and Bacteriology

Professors—Physics Sir E Rutherford, D Sc., LL.D, F R S Chemistry H B Dixon F R S Organic Chemistry Arthur Lapworth, D Sc, F R S Zoology S J *Hickson*, D Sc, F R S. Botany F E Weiss, D Sc, F R S. Cryptogamic Botany W H Lang M B, D Sc, F R.S. Physiology W Stirling, M D, LL D, D Sc Clinical Medicine E S Reynolds, M D, B Sc Anatomy G Elliot Smith, M D, F R S Materia Medica R B Wild, M D Public Health and Bacteriology A S Delépine, M B, M Sc Pathology H R Dean, M D Systematic Medicine George R Murray, M D Systematic Surgery William Thorburn, B Sc, F R.C S Clinical Surgery J W Smith, F R C S Obstetrics and Gynæcology Archibald Donald, M D Forensic Medicine William Sellers, M D

Communications should be addressed to the Registrar, The University, Manchester

Scholarships, Fellowships, and Prizes —At this University there are 22 Foundation Scholarships, 12 Exhibitions, five being for subjects connected with medical study, a Surgical Prize, a Fellowship, Research Fellowships in Public Health, and Honorary Research Fellowships 13 Scholarships are Entrance Scholarships one is Medical, and there are one each for Surgery, Biology, Physiology, and Diseases of Children, and one General Medical and Surgical Three of *the* Exhibitions are for Physiology one for Anatomy, and one for French and German The Surgical Prize, named "The Dumville," is

Professors—Physics W M Hicks, Sc D , F R.S Chemistry W Palmer Wynne, D Sc , F R S Biology Alfred Denny, M Sc F L S Anatomy C J Patten, M.A. M D Sc.D Physiology J B Leathes M B , F R.S Medicine A J Hall, M A , M D , F R C P Surgery Sinclair White, M D , M Ch , F R C S Pathology J Sholto C Douglas, M A , M D Midwifery P E Barber, B A. M R C S , L R C P Public Health H Scurfield, M D , D P H Dean of the Medical Faculty J B Leathes M B , F R S

Scholarships &c —At this University, in addition to four Edgar Allen scholarships of £100 a year for three years holders of which can take the courses in the Faculty of Medicine there are 8 scholarships and a Town Trust Fellowship Full particulars as to curriculum scholarships, &c., may be had on application to the Registrar or to the Dean of the Medical Faculty

The Medical School —The new buildings of the University opened in 1905 are situated at the west end of the city, adjoining Weston Park, and the Medical Department occupies the entire north wing of the University quadrangle The various athletic and other students' societies are under the management of a Students' Representative Council, elected annually There are large and comfortable common rooms both for men and women students A refectory is open daily at the University where students may obtain refreshments, lunch, dinner &c , at extremely moderate prices The University journal, *Floreamus*, edited by a committee of staff and students is published each term The University Hostel, Ashgate road, is recognised by the Senate as a residence for women students, full particulars of which may be obtained of the tutor for women students

Clinical Instruction —The University is within easy reach of the various hospitals with which it is connected for clinical purposes These are as follows The Royal Infirmary containing 320 beds, with an annual average number of over 3800 in patients, over 11 500 out-patients and over 23 000 casualties , the Royal Hospital, with 191 beds and an annual number of 3000 in patients, over 20 000 out patients and nearly 20 000 casualties , and the *Jessop Hospital* for Diseases of Women with 80 beds about 750 in patients, and over 3000 out-patients , also a Maternity department, with about 450 in patients per annum and about 700 out patient cases attended Special courses on Fevers are held at the City Fever Hospitals (570 beds) and on Mental Diseases at the South Yorkshire Asylum (1610 beds) For purposes of clinical practice the practices of the Royal Infirmary and Royal Hospital are amalgamated giving a total of 511 beds for the treatment of medical, surgical, and special cases There are special departments for the treatment of Diseases of the Eye at each institution with wards assigned to them In addition to these the Royal Infirmary has special departments for the treatment of Diseases of the Skin and Ear with beds assigned to them whilst at the Royal Hospital there are special out patient departments for Diseases of the Throat Ear Skin Orthopædics and Mental Diseases During the last year over 6000 patients passed through the wards of the two institutions while those attending as out patients numbered over 45 000 The department of Pathology and Bacteriology in the University is fitted with every requirement for the most advanced work in these subjects

Fees —The Composition Fees are as follows A for University Lectures and Practical Classes £80 , B, for Clinical Hospital Practice £49 17s 6*d* These two composition fees entitle the student to attendance on *all* the Lectures Laboratory Classes and Hospital practice (except Pharmacy) required for a Medical and Surgical Degree in the University or for the ordinary qualifying examinations of the various Examining Boards The composition fees do not cover the cost of apparatus instruments parts for dissection in anatomy &c all of which must be provided by the student when and as required The fees are payable in instalments extending over the five years of the curriculum

Staff of the Royal Infirmary Sheffield —Physicians Dr W S Porter Dr A F Barnes, and Dr A G Yates Surgeons Professor Sinclair White Mr Arthur Connell and Mr Archibald Cuff Assistant Surgeons Mr Ernest Finch and Mr T I Mount Dermatologist Dr Rupert Hallam Honorary Pathologist Professor J Sholto C Douglas Medical Officer to the Ear and Throat Department Mr W S Kerr Ophthalmic Surgeon Mr G H Pooley Medical Registrar Dr W W King Medical Officer in Charge of Electrical Department Dr Rupert Hallam Anæsthetists Dr W D Mart, Dr W Sneddon, Dr T Robertson, and Dr Norton Milner Clinical Pathologist Dr W W King Honorary Secretary to the Medical and Surgical Staff Mr W S Kerr Secretary to the Infirmary Jno W Barnes

Staff of the Sheffield Royal Hospital —Physicians Professor Arthur Hall and Dr A E Naish Surgeons Mr Graham Simpson and Mr Garrick Wilson Assistant Physician Dr Herbert Henry Assistant Surgeons Mr Ferguson Wilson and Mr Vincent Townrow Ophthalmic Surgeon Dr Percival J Hay Assistant Ophthalmic Surgeon Mr Herbert Emmerson Aural Surgeon Dr George Wilkinson Physician for Mental Diseases Mr Gilbert E Mould Medical Officer to the Electrical Department Dr W Harwood Nutt Physician for Skin Diseases Dr E F Skinner Anæsthetists Mr Herbert Hallam, Dr C Graham Murray, Dr R G Abercrombie, Dr Vernon Favell and Mr J B H Holroyd. Pathologist Professor J Sholto C Douglas Honorary Secretary to the Medical and Surgical Staff Mr J B Ferguson Wilson (*pro tem*). Dental Surgeons Mr F G Mordaunt, Mr P S Stokes, and Mr H J Stoner Assistant Dental Surgeons Mr R. Cecil Webster Mr F W Goodwin, Mr J H Skerritt, Mr. W Skerritt and Mr Frank C Harrison Honorary Secretary to the Dental Staff Mr F G Mordaunt (*pro tem*)

UNIVERSITY OF BRISTOL

In the Faculty of Medicine there are the following degrees —Bachelor of Medicine and Bachelor of Surgery (M B and Ch B) Doctor of Medicine (M D), Master of Surgery (Ch M), Bachelor of Dental Surgery (B D S), and Master of Dental Surgery (M D S) There are also the following diplomas Diploma in Public Health (D P H), Diploma in Dental Surgery (L D S), and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine, Surgery, and Dentistry are required to pass an examination called the Matriculation Examination, which must include Latin or to pass such examination as may be regarded as equivalent by the Senate All courses, degrees, and diplomas are open to men and women alike

Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery —Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five and a half years, of which three shall have been passed in the University, and two of these three subsequent to pass in the second examination All candidates for the degrees of M B , Ch.B , are required to satisfy the examiners in the several subjects of three examinations

The First Examination —The subjects of examination are Chemistry (Inorganic) Physics, and Biology the courses pursued being those for the time being approved for the intermediate part of the B Sc curriculum This part of the curriculum shall extend over one year

The Second Examination —The subjects of examination are Organic Chemistry and Elementary Anatomy (Part I) and Advanced Anatomy and Physiology (Part II) Parts I and II may be passed separately or together

The Final Examination —The subjects of examination are Materia Medica and Pharmacy, Pharmacology and Therapeutics General Pathology, Morbid Anatomy and Bacteriology (Part I) Special Pathology Forensic Medicine, Toxicology and Public Health, Obstetrics (including Diseases of Women), Surgery (Systematic Clinical Practical and Operative) Medicine (Systematic Clinical, and Practical including Mental Diseases) (Part II) Candidates may pass I and II together or separately and Forensic Medicine and Toxicology may at the option of the candidate, be taken either with Part I or Part II

Degree of Doctor of Medicine —Candidates shall be Bachelors of the University of not less than two years standing as such and may elect either (1) to pass an examination in General Medicine, or (2) to pass an examination in State Medicine or (3) to present a Dissertation The candidate who elects to pass the examination in State Medicine must hold a diploma in Public Health of some University or College and the candidate who elects to present a Dissertation may be examined in the subject thereof

UNIVERSITY OF LEEDS

Four degrees in Medicine and Surgery are conferred—viz Bachelor of Medicine and Bachelor of Surgery (M B and Ch B) Doctor of Medicine (M D) Master of Surgery (Ch M), also Degrees and Diplomas in Dental Surgery and Diploma in Public Health A Diploma in Psychological Medicine is also granted

Degrees of Bachelor of Medicine and Bachelor of Surgery —Candidates for the degrees of Bachelor of Medicine and of Surgery are required to present certificates showing that they will have attained the age of 21 years on the day of graduation, and have attended courses of instruction approved by the University extending over not less than five years, two of such years at least having been passed in the University subsequently to the date of passing the First Examination Candidates must also satisfy the examiners in the several subjects of the following examinations entitled respectively the Matriculation Examination, or such other examination as may have been recognised by the Joint Matriculation Board in its stead, the First Examination, the Second Examination, and the Final Examination

The First Examination —The First Examination consists of Part I, Physics and Chemistry, Part II, Biology Candidates will be allowed to pass the two parts separately

The Second Examination —The Second Examination consists of Part I, Anatomy and Physiology, Part II, Materia Medica and Pharmacy Candidates will be allowed to pass the two parts separately

The Final Examination —The Final Examination consists of Part I, Pathology and Bacteriology Part II, Forensic Medicine and Public Health Part III, Medicine Systematic and Clinical, including Mental Diseases and Diseases of Children, Surgery Systematic, Clinical, and Practical, Obstetrics, and Gynæcology Systematic, Clinical and Practical, Pharmacology and Therapeutics Candidates will be allowed to pass Parts II and III separately or together, and they may present themselves for examination in Part I at the end of the tenth term

Degree of Doctor of Medicine —Candidates are not eligible for the degree of Doctor of Medicine or Master of Surgery unless they have previously received the degrees of Bachelor of Medicine and Bachelor of Surgery and at least one year has elapsed since they passed the examination for those degrees Candidates for the degree of Doctor of Medicine are required to present a dissertation and, if the dissertation be accepted, to pass an examination

Professors—Physics (Vacant) Chemistry A Smithells B Sc, F R S Organic Chemistry J B Cohen B Sc Ph D F R S Zoology W Garstang M A, D Sc Botany J H Priestley, B Sc Anatomy J K Jamieson, M B Physiology and Histology (Vacant) Pathology A S Leyton, M D Sc D Clinical Medicine A. G Barrs M D Medicine T W Griffith, F R C P Surgery R L Knaggs F R C S Clinical Surgery Sir B G A Moynihan, F R C S Obstetrics J B Hellier, M D Public Health W Angus M D D P H Therapeutics H J Campbell, M D Forensic Medicine F W Eurich, M D Mental Diseases J S Bolton M D D Sc

Information concerning scholarships and prizes can be obtained from the Dean of the Medical School

Clinical Instruction —THE LEEDS GENERAL INFIRMARY, in connexion with this medical faculty, has accommodation for 620 in patients including 88 beds at branch hospitals in the country During the last year 10 222 in patients and 34 819 out patients were treated. Clinical teaching takes place daily in the wards, and Clinical lectures are given in Medicine and Surgery by the Physicians and Surgeons There are Medical, Surgical Ophthalmic Aural, Electro therapeutic and Radiographic Departments in each of which special instruction is imparted to students A Gynæcological and Extern Obstetric Department, together with Laryngeal and Skin Clinics are in operation Several valuable prizes are given at the end of each session. Numerous appointments at the Infirmary are annually open to students after qualification

Staff of Leeds General Infirmary —Consulting Physicians Sir Thomas Clifford Allbutt, K C B, Dr John E Eddison Dr Charles M Chadwick and Dr Alfred George Barrs Consulting Surgeons Mr Thomas Pridgin Teale Mr A W Mayo Robson, Mr Edward Ward, and Mr Harry Littlewood Physicians Dr Thomas Churton, Dr T Wardrop Griffith, and Dr W H Maxwell Telling Surgeons Mr R Lawford Knaggs, Sir Berkeley Moynihan, Mr Walter Thompson, and Mr J Faulkner Dobson Ophthalmic Surgeons Mr H Secker Walker and Mr A. L Whitehead. *Ear Nose and Throat Surgeons* Mr G Constable Hayes and Mr E W Bain Obstetric Physician Dr J B Hellier Assistant Physicians Dr Geo W Watson, Dr R. A. Veale, and Dr C W Vining Assistant Surgeons Mr H Collinson, Mr L R. Braithwaite, Mr J A Coupland, and Mr S W Daw Pathologist Dr A S Leyton. Dental Surgeon Mr J B Hordern Director of the Electro-Therapeutic Department (Vacant) Clinical Pathologist Mr M J Stewart Assistant Clinical Pathologist (Vacant). Medical Tutor Dr J Le F C Burrow Surgical Tutor Mr A Richardson Anæsthetists Dr Douglas Seaton, Dr S T Rowling, Dr F Whalley, Dr Macvean, Dr F Marshall Greaves, Dr A. E. Hutton, Dr C T Matthews, Dr W Maxwell Munby, Dr R H B Adamson and Dr C E Dawson General Manager Mr Fred J Bray

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UNIVERSITY OF SHEFFIELD

The Degrees in the Faculty of Medicine are Bachelor of Medicine and Bachelor of Surgery (M B Ch B), Doctor of Medicine (M D), and Master of Surgery (Ch M). The courses and degrees in the Faculty of Medicine are open to men and women alike

Candidates for a medical degree shall have matriculated in the University or have passed such other examination as may be recognised for this purpose by the University and sanctioned by the Joint Matriculation Board

A candidate for the degrees of M B Ch B, shall produce certificates that he will have attained the age of 21 years on the day of graduation, that he has pursued the courses of study required by the University regulations during a period of not less than five years subsequently to the date of his matriculation three of such years at least having been passed in the University one at least being subsequent to the passing of the First Examination

Degrees of Bachelor of Medicine and Bachelor of Surgery

The First Examination —The subjects of the examination are Chemistry, Physics, and Biology The Intermediate B Sc Examination in these subjects will, on payment of the required additional fee, be accepted instead of this examination Candidates must, after matriculation and registration as medical students have attended courses of instruction (lectures and laboratory work) in chemistry, physics and biology for one year each

The Second Examination —The subjects of the examination are Anatomy and Physiology

The Third Examination —The subjects of the examination are Pathology and Pharmacology A candidate entering for the first, second, or third examination, who shall pass creditably in one subject of either examination and obtain a certain minimum of marks in the other, may enter for such other subject separately in a subsequent examination Candidates must have completed the fourth year of professional study

The Final Examination —The subjects of the examination are Medicine (including Forensic Medicine, Public Health, Mental Diseases and Diseases of Children), Surgery; and Obstetrics (including Gynæcology) Candidates must satisfy the examiners in all subjects at the same examination Candidates must have completed the fifth year of professional study

Degree of Doctor of Medicine —Candidates for the degree of Doctor of Medicine must have passed the examination for the degrees of M B, Ch B at least one year previously, must present a thesis embodying observations in some subject approved by the professor of medicine, and must pass an examination in the Principles and Practice of Medicine

Degree of Master of Surgery —Candidates for the degree of Ch M must have passed the examination for the degrees of M B Ch B at least one year previously and must, since taking the degrees of M B, Ch B, have held for not less than six months a surgical appointment in a public hospital or other public institution, affording full opportunity for the study of Practical Surgery

The subjects of examination are Systematic Clinical and Operative Surgery, Surgical Anatomy, Surgical Pathology, and Bacteriology

Professors—Physics W M Hicks, Sc.D , F R S Chemistry W Palmer Wynne D Sc., F R S Biology Alfred Denny, M Sc F L S Anatomy C J Patten M.A. M D Sc.D Physiology J B Leathes M B , F R S Medicine A J Hall, M A., M D , F R.C P Surgery Sinclair White M D , M Ch. F R C S Pathology J Sholto C Douglas, M A M D Midwifery P E Barber B A., M R.C S L.R.C P Public Health H Scurfield M D D P H Dean of the Medical Faculty J B Leathes M B F R S

Scholarships &c—At this University, in addition to four Edgar Allen scholarships of £100 a year for three years holders of which can take the courses in the Faculty of Medicine there are 8 scholarships and a Town Trust Fellowship Full particulars as to curriculum scholarships &c. may be had on application to the Registrar or to the Dean of the Medical Faculty

The Medical School—The new buildings of the University opened in 1905 are situated at the west end of the city, adjoining Weston Park, and the Medical Department occupies the entire north wing of the University quadrangle The various athletic and other students' societies are under the management of a Students Representative Council, elected annually There are large and comfortable common rooms both for men and women students A refectory is open daily at the University where students may obtain refreshments lunch dinner, &c., at extremely moderate prices The University journal, *Floreamus* edited by a committee of staff and students is published each term The University Hostel Ashgate-road is recognised by the Senate as a residence for women students full particulars of which may be obtained of the tutor for women students

Clinical Instruction—The University is within easy reach of the various hospitals with which it is connected for clinical purposes These are as follows The Royal Infirmary containing 320 beds with an annual average number of over 3800 in patients over 11 500 out-patients and over 23 000 casualties , the Royal Hospital with 191 beds and an annual number of 3000 in patients over 20 000 out patients and nearly 20 000 casualties, and the Jessop Hospital for Diseases of Women with 80 beds about 750 in patients and over 3000 out-patients, also a Maternity department, with about 450 in patients per annum and about 700 out-patient cases attended Special courses on Fevers are held at the City Fever Hospitals (570 beds) and on Mental Diseases at the South Yorkshire Asylum (1610 beds) For purposes of clinical practice the practices of the Royal Infirmary and Royal Hospital are amalgamated giving a total of 511 beds for the treatment of medical, surgical, and special cases There are special departments for the treatment of Diseases of the Eye at each institution with wards assigned to them In addition to these the Royal Infirmary has special departments for the treatment of Diseases of the Skin and Ear with beds assigned to them whilst at the Royal Hospital there are special out patient departments for Diseases of the Throat Ear Skin Orthopædics and Mental Diseases During the last year over 6000 patients passed through the wards of the two institutions while those attending as out-patients numbered over 45 000 The department of Pathology and Bacteriology in the University is fitted with every requirement for the most advanced work in these subjects

Fees—The Composition Fees are as follows A for University Lectures and Practical Classes £80 , B for Clinical Hospital Practice £49 17s 6*d* These two composition fees entitle the student to attendance on *all* the Lectures Laboratory Classes and Hospital practice (except Pharmacy) required for a Medical and Surgical Degree in the University or for the ordinary qualifying examinations of the various Examining Boards The composition fees do not cover the cost of apparatus instruments parts for dissection in anatomy &c all of which must be provided by the student when and as required The fees are payable in instalments extending over the five years of the curriculum

Staff of the Royal Infirmary Sheffield—Physicians Dr W S Porter Dr A F Barnes and Dr A G Yates Surgeons Professor Sinclair White Mr Arthur Connell and Mr Archibald Cuff Assistant Surgeons Mr Ernest Finch and Mr T B Mouat Dermatologist Dr Rupert Hallam Honorary Pathologist Professor J Sholto C Douglas Medical Officer to the Ear and Throat Department Mr W S Kerr Ophthalmic Surgeon Mr G H Pooley Medical Registrar Dr W W King Medical Officer in Charge of Electrical Department Dr Rupert Hallam Anæsthetists Dr W D Mart Dr W Sneddon, Dr T Robertson, and Dr Norton Milner Clinical Pathologist Dr W W King Honorary Secretary to the Medical and Surgical Staff Mr W S Kerr Secretary to the Infirmary Jno W Barnes

Staff of the Sheffield Royal Hospital—Physicians Professor Arthur Hall and Dr A E Naish Surgeons Mr Graham Simpson and Mr Garrick Wilson Assistant Physician Dr Herbert Henry Assistant Surgeons Mr Ferguson Wilson and Mr Vincent Townrow Ophthalmic Surgeon Dr Percival J Hay Assistant Ophthalmic Surgeon Mr Herbert Emmerson Aural Surgeon Dr George Wilkinson Physician for Mental Diseases Mr. Gilbert E Mould Medical Officer to the Electrical Department Dr W Harwood Nutt Physician for Skin Diseases Dr E F Skinner Anæsthetists Mr Herbert Hallam Dr C Graham Murray, Dr R G Abercrombie, Dr Vernon Favell and Mr J B H Holroyd. Pathologist Professor J Sholto C Douglas Honorary Secretary to the Medical and Surgical Staff Mr J B Ferguson Wilson (*pro tem*). Dental Surgeons Mr F G Mordaunt, Mr P S Stokes and Mr H J Stoner Assistant Dental Surgeons Mr R. Cecil Webster Mr F W Goodwin Mr J H Skerritt Mr. W Skerritt and Mr Frank C Harrison Honorary Secretary to the Dental Staff Mr F G Mordaunt (*pro tem*)

UNIVERSITY OF BRISTOL

In the Faculty of Medicine there are the following degrees —Bachelor of Medicine and Bachelor of Surgery (M B and Ch B) Doctor of Medicine (M D) Master of Surgery (Ch M) Bachelor of Dental Surgery (B D S) and Master of Dental Surgery (M D S) There are also the following diplomas Diploma in Public Health (D P H), Diploma in Dental Surgery (L D S) and Diploma in Veterinary State Medicine.

All candidates for degrees in Medicine Surgery, and Dentistry are required to pass an examination called the Matriculation Examination, which must include Latin, or to pass such examination as may be regarded as equivalent by the Senate All courses degrees, and diplomas are open to men and women alike

Conjoined Degrees of Bachelor of Medicine and Bachelor of Surgery—Candidates shall be not less than 21 years of age and shall have pursued the courses prescribed by University Regulations during not less than five and a half years of which three shall have been passed in the University, and two of these three subsequent to pass in the second examination All candidates for the degrees of M B , Ch.B are required to satisfy the examiners in the several subjects of three examinations

The First Examination—The subjects of examination are Chemistry (Inorganic) Physics, and Biology the courses pursued being those for the time being approved for the intermediate part of the B Sc. curriculum. This part of the curriculum shall extend over one year

The Second Examination—The subjects of examination are Organic Chemistry and Elementary Anatomy (Part I) and Advanced Anatomy and Physiology (Part II) Parts I and II may be passed separately or together

The Final Examination—The subjects of examination are Materia Medica and Pharmacy Pharmacology and Therapeutics General Pathology, Morbid Anatomy and Bacteriology (Part I) Special Pathology Forensic Medicine Toxicology and Public Health Obstetrics (including Diseases of Women) Surgery (Systematic Clinical Practical and Operative) Medicine (Systematic Clinical and Practical including Mental Diseases) (Part II) Candidates may pass I and II. together or separately, and Forensic Medicine and Toxicology may at the option of the candidate be taken either with Part I or Part II

Degree of Doctor of Medicine—Candidates shall be Bachelors of the University of not less than two years standing as such and may elect either (1) to pass an examination in General Medicine or (2) to pass an examination in State Medicine, or (3) to present a Dissertation The candidate who elects to pass the examination in State Medicine must hold a diploma in Public Health of some University or College and the candidate who elects to present a Dissertation may be examined in the subject thereof

Degree of Master of Surgery —Candidates shall be Bachelors of not less than two years as such, during which period they shall have attended the Surgical Practice of an institution approved for the purpose They shall pass an examination in Surgical Anatomy, Pathology, and Bacteriology, and Operative, Clinical, and General Surgery, and present to the University a Dissertation on some subject of Surgery

Professors—Chemistry Francis Francis, D Sc , Ph D Anatomy Edward Fawcett, M D , C M (Dean of the Faculty of Medicine) Physiology A F Stanley Kent, M A., D Sc Pathology I Walker Hall, M D , C M Obstetrics W C Swayne, M D , B S Surgery C A Morton, F R C S , and James Swain, M D , F R C S Medicine F H Edgeworth, M D , B C D Sc and J Michell Clarke M D , LL D , F R C P

Clinical Instruction —The allied hospitals (Bristol Royal Infirmary and Bristol General Hospital) have between them about 600 beds and extensive out-patient departments, special clinics for Diseases of Women and Children and those of the Eye, Throat, and Ear, in addition to large and well equipped departments for Dental work and large outdoor Maternity Departments

At each of these institutions there are well arranged pathological museums, post-mortem rooms, and laboratories for Morbid Anatomy There are also laboratories for work in Clinical Pathology, Bacteriology, and Cytology, in which special instruction is given in these subjects Departments are provided and well equipped for X ray work, both for diagnosis and treatment, the various forms of Electrical treatment, including High Frequency Currents, Electric Baths, Finsen Light treatment, and Massage

The students of the school also attend the practice of the Royal Hospital for Sick Children and Women, containing 140 beds, and that of the Bristol Eye Hospital, with 40 beds The total number of beds available for clinical instruction is therefore about 750

Staff of the Bristol Royal Infirmary —Honorary and Consulting Physicians Dr R Shingleton Smith, Dr H Waldo, and Dr J E Shaw Honorary and Consulting Surgeons Mr E C Board, Mr W H Harsant, Mr A. W Prichard, and Mr J Paul Bush Honorary and Consulting Ophthalmic Surgeon Mr F Richardson Cross Honorary Physicians Dr A B Prowse, Dr F H Edgeworth, Dr J A Nixon (Dean of the Faculty of the Royal Infirmary) and Dr J R Charles Honorary Surgeons Dr J Swain, Mr T Carwardine, Mr H F Mole and Mr C F Walters Honorary Ophthalmic Surgeon Mr E H E Stack Honorary Obstetric Physician Dr Walter Swayne Honorary Dental Surgeon Mr W R Ackland Honorary Physician to the Nose and Throat Department Dr P Watson Williams Honorary Assistant Physicians Dr J M Fortescue Brickdale and Dr Richard Clarke. Honorary Assistant Surgeons Mr A Rendle Short and Mr H Chitty Honorary Assistant Dental Surgeon Mr F C Nichols Pathologist Dr I Walker Hall Honorary Demonstrator of Morbid Anatomy Dr J J S Lucas Assistant Pathologist Dr J R Kay Mouatt Honorary Anæsthetist Mr A L Flemming Honorary Assistant Anæsthetists Mr S V Stock, Mr Leonard Moore and Mr B O Eskell Honorary Skiagraphist Mr James Taylor Facilities for women students are granted

Staff of the Bristol General Hospital —Honorary and Consulting Physicians Dr A J Harrison and Dr J Barclay Baron Honorary and Consulting Surgeons Mr George F Atchley, Mr Nelson C Dobson, Mr Chas F Pickering, and Mr H Greville Kyle Physicians Dr J Michell Clarke (Dean of the Faculty of the Bristol General Hospital) Dr George Parker, and Dr J O Symes Surgeons Mr C A Morton Mr R G Poole Lansdown, Mr J Lacy Firth, and Mr E W Hey Groves Physician Accoucheur Dr W H C Newnham Physician to Department for Diseases of the Skin Dr W Kenneth Wills Physician with Charge of Out patients Dr N Neild Surgeon to the Throat and Nose Mr A J Wright Surgeon to the Ear Mr J Lacy Firth Ophthalmic Surgeon Mr Cyril H Walker Assistant Physician Dr Carey F Coombs Assistant Surgeon Mr C A Moore Assistant Physician Accoucheur, with charge of Out-patients Mr D C Rayner Anæsthetists Dr J Freeman and Dr Hedley Hill Dental Surgeon Mr E A G Dowling Assistant Dental Surgeon Mr H J Wyatt Pathologist Mr G Scott Williamson Assistant Anæsthetists Dr C orfield, Dr W Russell Cooper, and Dr Harold B Logan Curator of Museum Mr G Scott Williamson Electrical Department Dr George Parker, Dr J Ellington Jones. Skiagraphist Dr F G Bergin

Further information as to scholarships, curricula, and fees can be obtained from the Dean of the Faculty of Medicine or the Registrar of the University

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UNIVERSITY OF WALES

This University has the privilege of granting degrees in Medicine and Diplomas in Public Health At the three constituent Colleges of Aberystwyth Bangor, and Cardiff there are Professors of Chemistry, Botany, Zoology, and Physics, so that the students of the University can obtain proper instruction in the ancillary subjects The foundation of a Medical Faculty has been laid at University College, Cardiff, where there is a recognised school of medicine

University College, Cardiff School of Medicine —All classes are open to both men and women students who may spend three or four out of their five years of medical study at Cardiff The courses of instruction given at Cardiff are recognised as qualifying for the examinations of the Universities, Royal Colleges, and other licensing bodies of Great Britain and Ireland, and they are specially adapted to meet the needs of those University students studying for Cambridge and London degrees Students who are preparing for these examinations may compound for their courses by paying a fee of £63, while a composition fee of £41 10s includes all the necessary courses for the first and second examinations for the Diploma of the Conjoint Board. In all cases the composition fees may be paid by instalments Hospital instruction is given at the King Edward VII 's Hospital, Cardiff. The attention of students about to matriculate is drawn to the numerous entrance scholarships offered for competition at University College, Cardiff, in April next, most of which may be held by medical students Full particulars of the examination for these may be obtained by application to the Registrar In the department of Public Health established in 1899 instruction is given qualifying for the D P H examinations Further information may be obtained from the Dean of the Faculty of Medicine

Lecturers —Physics Professor A L Selby Chemistry Professor C M Thompson Zoology Professor W N Parker Botany Professor A H Trow Anatomy Professor David Hepburn Physiology Professor J B Haycraft Materia Medica and Therapeutics Dr W Mitchell Stevens. Pathology and Bacteriology Professor Emrys Roberts Public Health and Hygienic Chemistry Mr J H Sugden Midwifery Hygiene Dr E Walford and Dr D J Morgan Midwifery (for Midwives) Dr E J Maclean Vaccination Professor Emrys Roberts

Clinical Instruction —King Edward VII 's Hospital, Cardiff —Students can attend the practice of this Hospital, which contains 311 beds 104 beds for military patients Founded 1837 In patients, 2260 , out-patients, 13,604

Staff —Consulting Physician Dr Herbert Vachell. Consulting Surgeon Dr T Wallace Consulting Dental Surgeon Mr John C Oliver Physicians Dr Mitchell Stevens and Dr Cyril Lewis Surgeons Mr P Rhys Griffiths, Mr William Sheen, and Mr J Lynn Thomas Assistant Physicians Dr Alfred Howell, Dr Ivor Davies, and Dr Herbert Evans Assistant Surgeons Dr H G Cook, Mr Cornelius A. Griffiths and Mr William Martin Ophthalmic Surgeons Mr F P S Cresswell and Mr R. Russell Thomas Assistant Ophthalmic Surgeon Dr D Leighton Davies Gynæcologists Dr Ewen J Maclean and Mr E Tenison Collins Ear Throat and Nose Surgeon Dr D R Paterson Pathologists Mr H A Scholberg and Professor Emrys Roberts Sanitary Adviser Dr E Walford Anæsthetist Mr Frederick W S Davies Assistant Anæsthetists Mr A. C Devereux and Dr J Sydney Rowlands Dental Surgeons Mr W Kittow and Mr Thomas Quinlan. Electrical Department Dr Owen L Rhys Resident Medical Officer Dr I A Razzak

Swansea General and Eye Hospital and Swansea Hospital Convalescent Home.—Hospital 172 beds, Convalescent Home 24 beds Consulting Physicians Dr D A Davies, Dr John A Rawlings and Dr J S H Roberts Consulting Surgeons Mr J Thomas, Mr H A

Latimer and Mr W F Brook Consulting Gynæcologist Dr R Nelson Jones Physicians Dr E Le C Lancaster and Dr D E Evans Surgeons Mr R C Elsworth, Mr C L Isaac, and Dr W L Griffiths Physician Accoucheur Dr F Knight Gynæcologist Dr Edgar Reid Ophthalmic Surgeons Dr Frank G Thomas and Dr H E Quick Surgeon to the Throat, Nose, and Ear Department Mr Alban Evans Assistant Physicians Dr A. Clarke Begg and Dr Urban Marks Assistant Surgeons Dr A W Cameron and Dr Trevor Evans Vaccine Therapist Dr A Clarke Begg Medical Officers for Out-door Patients Dr A W Cameron, Dr Trevor Evans and Dr Urban Marks Surgeon Dentist Mr H J Thomas Electro-Therapeutic Officer Dr D R Edwards Anæsthetists Dr H W Gabe, Dr T L Jones, and Mr D B O Evans Resident Medical Officers Dr J G Louden, Dr W H O Woods, and Mr T Rhys Secretary Superintendent Mr W D Hughes In patients, 2177, out-patients, 7978

ENGLISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON AND THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

Under this heading we give the regulations for the examinations enjoined by the Conjoint Examining Board of the Royal Colleges of Physicians of London and Surgeons of England and of the Society of Apothecaries upon students desiring their respective diplomas of qualification We do not give any list of schools recognised by these bodies as eligible to prepare students for their examinations beyond mentioning that all the schools which we have already described (under the heading of the Universities to which they are attached) are recognised as suitable places of instruction by the corporations granting medical diplomas The courses of study at the principal colonial medical schools are also recognised as qualifying for the examinations of these corporations

Any candidate who desires to obtain both the Licence of the Royal College of Physicians of London and the diploma of Member of the Royal College of Surgeons of England is required to complete five years of professional study at recognised Medical Schools and Hospitals and to comply with the following regulations and to pass the examinations hereinafter set forth Six months of the curriculum may be spent in an Institution recognised by the Board for instruction in Chemistry, Physics Practical Chemistry and Biology

Professional Examinations —There are three Examinations, called herein the First Examination, the Second Examination, and the Third or Final Examination, each being partly written, partly oral, and partly practical These examinations will be held in the months of January, April July and September or October unless otherwise appointed Every candidate intending to present himself for examination is required to give notice in writing to Mr F G Hallett, secretary of the Examining Board Examination Hall, Queen square, Bloomsbury W C 14 clear days before the day on which the examination commences, transmitting at the same time the required certificates

The subjects of the *First Examination* are—Chemistry Physics Elementary Biology and Practical Pharmacy A candidate may take this examination in three parts at different times (Chemistry and Physics must be taken together until the required standard is reached in both or in one of these subjects but a candidate will not be allowed to pass in one without obtaining at the same time at least half the number of marks required to pass in the other) A candidate will be admitted to examination in Chemistry and Physics in Practical Pharmacy and Elementary Biology on producing evidence of having passed the required Preliminary Examination and of having received instruction in these subjects at a recognised institution but he may take Pharmacy at any time during the curriculum A candidate rejected in one part or more of the First Examination will not be admitted to re examination until after the lapse of a period of no less than three months from the date of rejection, and he will be re examined in the subject or subjects in which he has been rejected If referred in Chemistry, Physics, or Biology he must produce evidence of further instruction at a recognised institution Any candidate who shall produce satisfactory evidence of having passed an examination for a degree in Medicine on any of the subjects of this examination conducted at a university in the United Kingdom, in India, or in a British colony will be exempt from examination in those subjects in which he has passed

The fees for admission to the *First Examination* are as follows For the whole examination, £10 10s , for re examination after rejection in Parts I and II , £3 3s , and for re-examination in each of the other parts, £2 2s

The subjects of the *Second Examination* are Anatomy and Physiology Candidates will be required to pass in both subjects at one and the same time. Candidates will be admissible to the Second Examination on production of the required certificates of professional study The study of Anatomy and Physiology before passing in two of the first three parts of the First Professional Examination is not recognised

A candidate referred on the *Second Examination* will be required, before being admitted to re examination, to produce a certificate that he has pursued, to the satisfaction of his teachers in a recognised place of study, his Anatomical and Physiological studies during a period of not less than three months subsequently to the date of his reference

The fees for admission to the *Second Examination* are £10 10s for the whole examination and £6 6s for re examination after rejection

The subjects of the *Third* or *Final Examination* are Part I Medicine, including Medical Anatomy, Pathology, Practical Pharmacy, Therapeutics, Forensic Medicine, and Public Health Candidates who have passed in Practical Pharmacy at the First Examination will not be re examined in that subject at the Third Examination Part II Surgery including Pathology, Surgical Anatomy and the use of Surgical Appliances Part III Midwifery and Diseases Peculiar to Women. Candidates may present themselves for Parts I , II , and III of the examination separately or together at the expiration of not less than two years (24 months) from the date of passing the Second Examination on production of the certificates of study required for the respective parts provided that the examination is not completed before the expiration of five years from the date of passing the Preliminary Examination

The fees for admission to the *Third* or *Final Examination* are as follows For the whole examination, £21 Part I For re-examination in Medicine including Medical Anatomy, Pathology Therapeutics, Forensic Medicine and Public Health, £5 5s , for re examination in Practical Pharmacy (if taken at this examination) £2 2s Part II For re examination in Surgery including Pathology, Surgical Anatomy, and the use of Surgical Appliances £5 5s Part III For re examination in Midwifery and Diseases Peculiar to Women, £3 3s

A candidate referred on the *Third* or *Final Examination* will not be admitted to re-examination until after the lapse of a period of not less than three months from the date of rejection and will be required, before being admitted to re examination, to produce a certificate, in regard to Medicine and Surgery of having attended the Medical and Surgical Practice or the Medical or Surgical Practice as the case may be during the period of his reference, and in regard to Midwifery and Diseases Peculiar to Women a certificate of having received, subsequently to the date of his reference, not less than three months' instruction in that subject by a recognised teacher

Students of recognised universities in England, Scotland, and Ireland who have passed examinations for a degree in Medicine at their universities in the subjects of the First and Second Examinations of the Examining Board may enter for the Final Examination at the expiration of two years from the date of passing in Anatomy and Physiology on production of the required certificates

Members of certain recognised Indian Colonial, and Foreign universities who have passed examinations for the Degree of Doctor or Bachelor of Medicine or Surgery in the subjects of the First and Second Examinations of the Examining Board may present themselves for the Final Examination under special conditions which can be ascertained on application to the Secretary

ROYAL COLLEGE OF PHYSICIANS OF LONDON
THE MEMBERSHIP AND FELLOWSHIP

In addition to the diplomas granted by the English Conjoint Board, the Royal College of Physicians of London and the Royal College of Surgeons of England grant honour diplomas, which no longer give the right to practise professionally if held separately The Royal College of Physicians of London has two such diplomas, the *Fellowship* which is a purely honorary distinction and the *Membership* which is obtained by examination

Membership —Every candidate for the Membership of the College must furnish proof of having attained the age of 25 years Candidates must not be engaged in trade, dispense medicine, make any arrangement with a chemist or any other person for the supply of medicine, or practise medicine or surgery in partnership, by deed or otherwise Any candidate being already registered or having passed a qualifying examination in accordance with the Medical Act of 1886, who has obtained the degree of Doctor or Bachelor of Medicine at a University in the United Kingdom in India, or a British colony, or who has obtained a foreign qualification entitling him or her to practise medicine or surgery in the country where such qualification has been conferred wherein the courses of study and the examinations to be undergone previously to graduation have been adjudged by the Censors' Board to be satisfactory, will (if the Censors think fit) be admitted to the Pass Examination The nature and extent of this examination will, in the case of each candidate, be determined by the Censors' Board All other candidates must produce proof of having passed the examinations required for the Licence of the College The examination is directed partly to pathology and partly to the practice of medicine and may be modified in circumstances to be ascertained by application to the Registrar For example, candidates under 40 years of age are examined in an ancient and a modern language, a test from which their seniors are exempt *The fee for admission as a Member of the College* is 40 guineas, except when the candidate for Membership is a Licentiate of the College, in which case the fee already paid for the Licence shall be deducted from the 40 guineas The fee for the examination is £6 6*s*

Fellowship —The *Fellows* are selected annually from the ranks of the *Members* by the Comitia of the College

ROYAL COLLEGE OF SURGEONS OF ENGLAND
THE FELLOWSHIP

The Royal College of Surgeons of England confers its diploma of Fellow upon a few distinguished persons in an honorary capacity Two Members of long standing may also be elected to the Fellowship annually But the bulk of the Fellows obtain the diploma as the result of examination

Fellowship —The examination for the Fellowship is divided into two parts—viz. the First Examination and the Second Examination The subjects of the First Examination are Anatomy and Physiology and the questions on these subjects may require an elementary acquaintance with Comparative Anatomy and Physiology The examination is partly written and partly *vivâ voce* The subjects of the Second Examination are Surgery including Surgical Anatomy and Pathology The examination is partly written and partly *vivâ voce* and includes the examination of patients and the performance of operations on the dead body The examinations are held during the months of May and November of each year

The fees for examination are —First Examination each admission, 5 guineas Second Examination each admission 12 guineas Of such examination fees 17 guineas will be reckoned as part of the fee payable upon admission to the Fellowship The fee to be paid upon admission to the Fellowship is 30 guineas, except when the candidate is a Member of the College in which case the fee is 20 guineas

A Member of the College is admissible to the First Examination at any time after receiving his Diploma of Membership A candidate who is not a member of the College is admissible to the first Professional Examination for the Fellowship on the production of evidence of having passed the First and Second Examinations of the Examining Board in England by the Royal College of Physicians of London and the Royal College of Surgeons of England (or, if a member of a University recognised by the College for the purpose, of having passed the Examinations in his University equivalent to the First and Second Examinations of the Board) and on the production of certificates of attendance upon certain courses of study described in the Regulations

A Member of the College is admissible to the Second Examination at any time after having passed the First Examination, on producing satisfactory evidence of having been engaged not less than six years in the study (or study and practice) of the profession

A candidate who is not a Member of the College must possess the registrable surgical and medical degrees of universities recognised by the Council and must have been engaged in the study (or study and practice) of the profession for not less than four years subsequent to the date of obtaining the recognised qualification, one year of which shall have been spent in attendance on the Surgical Practice of a recognised hospital The diploma of Fellow is not conferred upon successful candidates until they have attained the age of 25 years

The Regulations may be obtained on application to the Director of Examinations Examination Hall, Queen square, Bloomsbury, London, W C

SOCIETY OF APOTHECARIES OF LONDON

There are two examinations—Primary and Final The Final examination is divided into Section I and Section II The Primary examination is held quarterly Final examinations are held monthly No examinations are held in the month of September

The Primary examination consists of two parts Part I Elementary Biology , Chemistry, Chemical Physics, including the Elementary Mechanics of Solids and Fluids, Heat, Light, and Electricity , Practical Chemistry , and Materia Medica and Pharmacy Part II includes Anatomy, Physiology, and Histology This examination cannot be passed before the completion of twelve months' Practical Anatomy with Demonstrations, and these subjects cannot be taken separately except in the event of the candidate having previously passed in one A schedule for the Primary examination, to be obtained of the Secretary, must be signed by the Dean of the Medical School or other authority Section I of the Final examination consists of three parts Part I includes the Principles and Practice of Surgery, Surgical Pathology and Surgical Anatomy, Operative Manipulation, Instruments and Appliances Part II. includes the Principles and Practice of Medicine, Pharmacology, Pathology and Morbid Histology , Forensic Medicine, Hygiene, Theory and Practice of Vaccination, and Mental Diseases Part III includes Midwifery, Gynæcology and Diseases of New born Children and the Use of Obstetric Instruments and Appliances Section I of the Final examination cannot be passed before the expiration of 45 months from the date of commencement of medical study, during which time not less than three winter sessions and two summer sessions must have been passed at one or more of the medical schools connected with a general hospital recognised by the Society Section II of the Final examination consists of two Parts Part I Clinical Surgery , Part II Clinical Medicine and Medical Anatomy Section II cannot be passed before the end of the fifth year

The course of study for the *Primary examination* is as follows —Elementary Biology, not less than three months, Chemistry and Chemical Physics six months, Practical Chemistry, three months, Pharmacy and Dispensing, three months, Anatomy six months, Practical Anatomy with Demonstrations, 12 months, Physiology, six months, Histology with Demonstrations, three months. The study of these subjects must be pursued at a Medical School recognised by the Society Instruction in Pharmacy and Dispensing must be given by a registered medical practitioner or by a member of the Pharmaceutical Society by examination or in a public hospital, infirmary, or dispensary

The course of study for the *Final examination Section I*, includes attendance on the Surgical and Medical Practice (with Post-mortem Examinations) at a hospital connected with a medical school for a period of one winter and one summer session , lectures on the Principles and Practice of Surgery six months , *Practical Surgery*, three months , Clinical Surgical Lectures nine months , Dressership six months, Performance of Surgical Operations on the Dead Body, Lectures on Principles and Practice of Medicine, six months, Pathology, three months, Clinical Medical Lectures nine months, Clinical Clerkship six months, Forensic Medicine Hygiene and Insanity three months, Midwifery and Gynæcology, three months, Clinical Instruction in the same, three months, a course of Practical Midwifery, attendance on 20 Midwifery cases. The course of medical study must extend over the above-mentioned period of 45 months and the offices of dresser or clinical clerk must be held at a hospital or other institution recognised by the Society

The course of study for the *Final examination Section II.*, includes either attendance on the Practice of Medicine and Surgery at a hospital or other institution recognised by the Society for a further period of 12 months, or six months as above and six months as a pupil of a registered practitioner holding a public medical or surgical appointment or attendance at two special hospitals for six months (three months at each hospital) and for six months at a general hospital, all such hospitals to be recognised by the Society Evidence shall also be given of practical instruction in Infectious Diseases and in Mental Diseases (at a lunatic asylum or in the wards of an institution containing a special ward set apart for the treatment of mental diseases) and in any two of the following subjects Ophthalmic Surgery Laryngology with Rhinology and Otology, Dermatology, and Diseases of Children No candidate is eligible for the Final examination who has not completed the curriculum prescribed by the Society, in evidence of which a schedule, to be obtained of the Secretary must be produced signed by the Dean of the Medical School or other authority Prior to Section II of the Final examination the candidate must produce certificates (1) of being 21 years of age, (2) of moral character, (3) of the course of medical study, (4) of proficiency in vaccination signed by a teacher authorised by the Local Government Board, and (5) of instruction in the administration of anæsthetics Candidates intending to present themselves for examination are required to give 14 days' notice A form for this purpose will be sent on application

Licentiates are eligible for the Membership of the Society of Apothecaries Particulars may be obtained on application to the clerk.

The fee for the Licence is 20 guineas Female candidates are admitted to examinations. The examination offices are open from 10 A M to 4 P M on Saturdays from 10 A.M to 1 P M All letters should be addressed to the Secretary Court of Examiners Society of Apothecaries of London, Blackfriars E C

METROPOLITAN ANCILLARY SCHOOLS AND HOSPITALS AFFORDING FACILITIES FOR CLINICAL OBSERVATION

The institutions which follow provide to the medical student and *medical graduate* facilities for different forms of instruction and clinical observation. In each case further information can be obtained from the secretary of the hospital.

THE SEAMEN'S HOSPITAL SOCIETY possesses two hospitals — the *Dreadnought* Hospital at Greenwich, 250 beds and the Branch Hospital in the Royal Victoria and Albert Docks E, 50 beds It has also two Dispensaries—one in the East India Dock road and the other at Gravesend—from which the patients are transferred to the hospitals The London School of Clinical Medicine is attached to the *Dreadnought* Hospital and the medical staff is as follows —Consulting Physician Dr Guthrie Rankin Consulting Surgeon Sir William Bennett Physicians Sir Dyce Duckworth Sir Frederick Taylor Sir J Rose Bradford F R S and Dr S Russell Wells Surgeons Mr W Turner Mr L H McGavin Mr E Rock Carling and Mr C C Choyce Ophthalmic Surgeon Mr L V Cargill Surgeon for Diseases of the Skin Sir Malcolm Morris Surgeon for Diseases of the Throat Nose and Ear Mr Richard Lake Neurologist Dr Gordon Holmes Physician in Charge of the Electrical Department Colonel Cyril Parry Assistant Physicians Dr C F Sandell Dr H I Carlill and Dr H R. Prentice. Assistant Surgeon Mr I Cole Mr C Rowntree and Mr I G Stanley Assistant Physician for Diseases of the Skin Dr H MacCormac Assistant Ophthalmic Surgeon Mr R Bickerton. Assistant Surgeon for Diseases of the Throat, Nose, and Ear Mr G N Biggs Director of Pathology Professor R Tanner Hewlett Anæsthetists Dr E W Gandy and Dr W E Robinson Dean Mr C C Choyce Medical Superintendent Dr R S Lawson The London School of Tropical Medicine is attached to the Albert Dock Hospital of the Society and the medical staff is as follows Physicians Sir Patrick Manson, G C M G, *Professor* F M Sandwith, *Dr* C W *Daniels and* Dr G C Low Surgeon Mr J Cantlie and *Colonel* J J Pratt. Ophthalmic Surgeon Mr L V Cargill Dental Surgeon Mr T H Vaughan Director Mr H B Newham Medical Officer East India Dock-road Dispensary Mr W H F Oxley Surgeon Gravesend Dispensary Mr C E Robbs Secretary Mr P J Michelli, C M G

WEST LONDON HOSPITAL Hammersmith, W — *This* hospital has 160 beds, all of which are *constantly* in use 2421 in patients and 32 805 out-patients whose attendances numbered 141,403, were treated last year Attached to the hospital is the West London Post-Graduate College The practice of the *hospital* is reserved *exclusively* for *qualified* men, no junior students being admitted Instruction is given in *the medical* and surgical out-patient rooms and demonstrations are given in the wards every morning and afternoon Lectures and demonstrations are in abeyance during the war Special Classes are held in Diseases of the Throat and Nose, Skin, and Eye, and in Gynæcology *Medical Electricity* Operative Surgery Bacteriology, Anæsthetics *Intestinal* Surgery Medical and Surgical Diseases of Children, Blood and Urine, Clinical Microscopy, Tropical Medicine, Cystoscopy Venereal Diseases, and Operative Ophthalmology The accommodation for post-graduates consists of a large lecture room together with reading, writing, and class rooms, &c The hospital has a fully equipped pathological laboratory at which instruction is given in elementary bacteriology a class being held every month The fees for hospital practice including lectures are £6 6*s* for three months or £15 15*s* for one year The certificate of the hospital is accepted by the Admiralty, War Office, Colonial Office, and India Office in cases of study leave. Further information can be obtained on application to the Dean, Mr Donald Armour or Vice-Dean Mr Bishop Harman at the hospital. Physicians Dr A P Beddard, Dr E A. Saunders, and Dr H Pritchard Physician for Diseases of Women Dr Drummond Robinson Assistant Physician for Diseases of Women Dr H J F Simson Surgeons Mr A Baldwin, Mr Donald Armour and Mr J Pardoe. *Surgeon* for Diseases of the Eye Mr Bishop Harman Assistant Surgeon for Diseases of the Eye Mr H P Gibb Assistant Physicians Dr Grainger Stewart, Dr J M. Burnford, and Dr Sydney A Owen Assistant Surgeons Mr O L Addison, Mr H Tyrrell Gray Mr H S Souttar and Mr S G MacDonald Surgeon Dentist Mr H. Lloyd Williams Physician in charge of Throat and Nose and Aural Department Dr H J Banks Davis Physician in charge of Children's Department Dr E. A. Saunders Surgeon in charge of Orthopædic Department Mr A Baldwin. Pathologist Dr R R Elworthy *Dermatologist* Dr G Pernet Administrators of Anæsthetics *Dr* G P Shuter Dr H. M Page and Dr W E Robinson Assistant Anæsthetists Mr G R *Phillips* Mr J H Newmarch, Mr R W Ironside and Dr J Birt Electrical Department Mr E D MacDougal X Ray Department Dr R. Morton Medical Registrar Dr A J *Scott Pinchin.* Surgical Registrar Mr S G MacDonald. Secretary of the Hospital Mr A *Betteridge*

GREAT NORTHERN CENTRAL HOSPITAL, Holloway road, N —This hospital is *recognised* by the Examining Board in England of the Royal Colleges of Physicians and Surgeons as a place of study during the fifth year of the medical curriculum Besides the Honorary Staff there are six Anæsthetists Pathologist Resident Medical Officer two resident House Physicians and three resident House Surgeons The hospital contains 340 beds (including emergency beds), which are fully occupied. There is also a ward for children under five years of age The large rectangular and circular wards, each of which contains 24 beds, the observation wards, the two operation theatres general and special out patient and pathological departments, are specially designed with a view of offering the greatest facilities for clinical work. There is also a well appointed electrical department The Pathological Department has been extended and is under the control of a Director of Clinical Pathology The Reckitt Convalescent Home at Clacton on Sea belongs to the hospital It contains 60 beds Medical practitioners are cordially invited to see the general and special practice of the hospital Demonstrations are given daily in the wards and out patient departments Clinical assistants (qualified), clinical clerks, and pathological clerks are appointed in the general and special departments and may receive certificates at the end of their terms of office Further particulars from the Secretary of the Medical Committee at the Hospital Consulting Physicians Sir R W Burnet and Dr E C Beale Consulting Surgeon Mr Peyton T B Beale Consulting Ophthalmic Surgeon Mr A Stanford Morton Consulting Radiologist Dr Robert Knox Physicians Dr A Morrison, Dr Symes Thompson, Dr Hinds Howell, Dr F W Price, Dr H L Tidy and Dr E Bellingham Smith Obstetric Physicians Dr G F Blacker and Dr Cuthbert Lockyer Physician for Skin Dr Henry C Semon Surgeons Mr G B M White, Mr Arthur Edmunds, Mr C C Choyce, Mr Gwynne Williams and Mr Barrington Ward Ophthalmic Surgeon Mr A. H Payan Dawnay Throat and Ear Surgeons Mr J Gay French and Mr H T Mant Dental Surgeon Mr C F Peyton Baly Medical Officers in charge of Electrical Department Dr Robert Knox and Dr John Morison Director of Clinical Pathology Dr Ernest H Shaw

Prince of Wales's General Hospital Tottenham, N — This general hospital is in the midst of a densely populated neighbourhood of more than half a million inhabitants It contains medical surgical gynæcological, and children's wards, having 125 beds There are special departments for gynæcological cases, diseases of the eye, ear, throat, and nose, skin diseases, medical electricity, radiography, and dentistry Operations are performed every afternoon of the week (except Saturday) at 2 30 P M Clinical instruction, ordinarily including laboratory classes, and lectures are given in the wards and out-patient departments laboratories, and lecture hall in connexion with the North East London Post-Graduate College attached. There are four Resident Medical Officers, and Clinical Assistants are appointed under certain conditions Further particulars in regard to the hospital may be obtained from Mr H W Carson, Secretary to the Medical Committee, 111, Harley-street, W , or from Dr A. J Whiting Dean of the North East London Post Graduate College, 19A, Cavendish square, W Consulting Physicians Sir James Reid and Dr Percy Kidd Consulting Surgeon Mr Walter Edmunds Physicians Dr R' Murray Leslie, Dr G P Chappel, and Dr A J Whiting Assistant Physicians Dr A G Auld and Dr T R Whipham Surgeons Mr H W Carson and Mr J Howell Evans Assistant Surgeon Mr E Gillespie Gynæcologist Dr A E Giles Assistant Gynæcologist Dr J Bright Banister Surgeons to Ear, Nose, and Throat Department Mr H D Gillies and Mr C H Hayton Ophthalmic Surgeon Mr R P Brooks Assistant Ophthalmic Surgeon Mr E A Dorrell Physician for Skin Diseases Dr H W Barber Physician to Electrical Department Dr Metcalfe Anæsthetists Dr C F Hadfield Dr W E Hills, and Dr Shannon Bacteriologist Mr Benians Secretary Mr F W Drewett

London Temperance Hospital Hampstead road, N W (Established 1873) —Consulting Physician Dr Fenwick. Physicians D Parkinson, Dr Addinsell and Dr Kevin Byrne Consulting Surgeon Sir William Collins Surgeons Mr Arthur Evans and Mr H J Paterson Assistant Surgeons Mr James McClure and Mr Chad Woodward Ophthalmic Surgeon Mr J Stroud Hosford Physician for Diseases of the Skin Dr Sommerville Ear, Nose and Throat Surgeon Mr Harold L Whale Medical Officer in charge of Electrical Department Dr Herbert Rhodes Dental Surgeon Mr A Alexander The hospital contains 116 beds The in patients in 1916 were 1171 and the out-patients and casualties numbered 16 369 new cases The medical and surgical practice of the hospital is open to students and practitioners Operations Mondays at 2 P M , Tuesdays, Wednesdays, and Fridays at 9 A M

Hampstead General and North West London Hospital —The Hampstead General Hospital (Haverstock Hill) and the North West London Hospital (formerly at Kentish Town) have been amalgamated since 1907 The Hampstead General Hospital (137 beds—viz , 118 free, 6 isolation, &c., and 13 paying or contributory, out of these, 53 beds are reserved for soldiers) accommodates the in patients from the districts hitherto served by both hospitals The out-patients, with the exception of Hampstead casualty and emergency cases, attend exclusively at the Out patients Department Bayham street, Camden Town, where there are usually two Resident Medical Officers as well as resident nurses Physicians to In patients Dr G A Sutherland and Dr C O Hawthorne Surgeons to In patients Mr J Jackson Clarke and Mr J W Thomson Walker Physicians to Out-patients Dr A Manuel, Dr F G Crookshank, and Dr A. J Scott Pinchin Surgeons to Out patients Mr G E. Waugh, Mr Sidney A. Boyd, and Mr Chad Woodward. Physician for Diseases of the Skin Dr S E Dore Gynæcologist Mr Bryden Glendining Ophthalmic Surgeon to In patients Sir William J Collins Ophthalmic Surgeon to Out patients Mr T W Letchworth. Throat and Ear Mr H L Whale Dental Surgeon Mr C H J Acret Anæsthetists Dr G A H Barton, Mr Hedley C Visick, and Dr Fraser Pathologist Dr Herbert W Perkins Further particulars from the ~~secretary at the~~ hospital (Haverstock Hill, N W)

New Hospital for Women, 144 Euston road, N W — Physicians for In patients Miss Macdonald, M B , and Mrs Flemming, M D Surgeons for In patients Miss Aldrich-Blake, M D , M S , and Miss Chadburn, M D , B S. Physicians and Surgeons to Out-patients Miss Bolton, M D , B S Miss Hamilton, M D , B S , Miss Rawlins, M.B , B S , and Miss Paine, M B , B S Children's Department Miss Peake, M D , B S Ophthalmic Surgeon Miss Sheppard, M B Senior Assistants for Out-patients Miss Alstrom, M B , Mrs Wilks M D , Mrs Sinclair M D , and Mrs Rorke M B Ch B Obstetricians Miss Chadburn, M.D , B S., Miss Turnbull, M D , and Miss Davies Colley, M D , F R C S Anæsthetists Miss Browne L.S A., and Miss Payne, M D A considerable number of the students work in the New Hospital under the visiting staff and in return for much valued clinical teaching they perform the duties assigned to students in the wards of a general hospital. The officers in charge of the centre for the treatment of Venereal Disease are Skin Department Dr L Hamilton Gynæcological Department Dr Morna Rawlins Assistant Dr E Minett Secretary Miss Imogen H Murphy

The South London Hospital for Women 103 South Side Clapham Common, S W , Out-patient Department 86–90 Newington Causeway, S E —This hospital, officered entirely by medical women, is a general hospital for women, girls, and small children of both sexes, and provides accommodation for 80 patients All diseases are treated with the exception of acute infectious fevers and mental disease There are Ophthalmic, X Ray, and Pathological Departments The provision of additional facilities for post-graduate training for medical women is one of the special objects of the hospital At the Out-patient Department in Newington Causeway 7028 new cases were treated during the past year, the total number of out-patient attendances amounting to 24 920 Clinical assistants (qualified women only) are from time to time appointed in the Out-patient Department *Consulting Surgeon* Mrs Scharlieb Physicians Dr Fraser and Dr Pulteney Assistant Physicians Dr Thackrah and Dr Peake Surgeons Miss Chadburn and Miss Turnbull Assistant Surgeons Miss Davies-Colley, Miss Huxley, and Miss MacKenzie Children's Department Physician Miss Pickard Assistant Physician Miss King Ophthalmic Surgeon Miss Roberts Pathologist Miss Whittingham Radiographer Miss Bernard. Anæsthetist Mrs Tindal Robertson Venereal Disease Department Medical Officer Skin Clinic Dr Agnes Savill Medical Officer, Gynæcological Clinic Mrs Tindal Robertson Secretary Miss M E Ridler

French Hospital and Dispensary Shaftesbury-avenue W C —This hospital, which was founded in 1867 to afford medical treatment for poor foreigners who speak the French language has 74 beds, of which 30 are now occupied by British wounded soldiers Physicians Dr G Ogilvie and Dr L Williams. Physicians to the Out-patients Dr H Dardenne Dr Alex Manuel and Dr J Campbell McClure Surgeons Mr W H Clayton Greene and Mr H de Méric Obstetric Physician Dr S Sunderland Ophthalmic Surgeons Mr C Higgens and Mr G W

Thompson Dental Surgeon Mr Wesley Barritt Honorary Anæsthetist Mr Walter Tyrrell Anæsthetists Dr J M Barlet and Dr Harvey Hilliard

The French (Convalescent Home and Retreat for Aged French People at Brighton) contains 91 beds, of which 60 are now occupied by British wounded soldiers Secretary Mr G Pondepeyre

ITALIAN HOSPITAL, Queen square W C —This institution was established in 1884 for the maintenance and medical treatment of Italian and Italian speaking people, irrespective of their religious and political opinions, who may be suffering from sickness or bodily infirmity, but the sick poor of any nationality are also admitted for treatment The institution also provides surgical and medical relief to Italians and others not being inmates of the hospital It has 50 beds normally, now increased to 85, of which 60 are devoted to British wounded Honorary Consulting Physician Sir Dyce Duckworth Honorary Consulting Surgeons Sir Frederick Treves and Mr George Lenthal Cheatle Physicians Commre Dr F Melandri and Cav Dr Vincent Dickinson Assistant Physicians Dr G Tallarico and Dr Andrew S Currie Surgeons Mr T P Legg and Mr Sydney G Macdonald Assistant-Surgeon (Vacant) Throat, Nose, and Ear Department Cav J Donelan Ophthalmic Surgeon Mr Stanford Morton Consulting Dental Surgeon Cav J FitzGerald Assistant Dental Surgeon Mr E Whishaw Wallis Anæsthetists Dr Hugh Richard Phillips and Dr R H Lee X Ray Department Dr Stanley Melville

GERMAN HOSPITAL, Dalston N E —This hospital was founded in 1845 with the object of supplying medical aid to poor people speaking the German language and for cases of emergency and of accident It has 154 beds, including a sanatorium with 12 beds and a convalescent home at Hitchin with 40 beds Consulting Physician Sir H Weber Consulting Surgeon (Vacant) Physician Dr F P Weber Surgeons Mr E Michels, Mr G J Jenkins, and Mr A Compton Ophthalmic Surgeons Mr R Gruber and Mr O Markus Resident Medical Officers Mr H Schmidt and Mr M Schroeter

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Albany Memorial) Queen square, Bloomsbury, W C —The hospital, with the Finchley branch contains 210 beds and cots The physicians attend every Monday, Tuesday, Thursday, and Friday at 2 P M In and out-patient practice at that hour Consulting Physicians Dr Buzzard, Sir D Ferrier F R S, and Dr Ormerod Physicians Dr Tooth, F R S, Dr James Taylor, Dr J S Risien Russell, and Dr Aldren Turner Physicians for Out-patients Dr F E Batten, Dr J S Collier, Dr E F Buzzard and Dr Grainger Stewart Assistant Physicians Dr Gordon Holmes, Dr Hinds Howell, Dr S A K Wilson, and Dr P W Saunders Surgeons Mr Donald J Armour and Mr Percy W G Sargent Ophthalmic Surgeon Mr Leslie Paton. Laryngologist and Otologist Mr Sydney Scott. Gynæcologist (Vacant) Anæsthetists Dr Llewelyn Powell and Dr Z Mennell Clinical Clerks are appointed under the in patient and out-patient physicians Lectures are given on Tuesdays and Fridays at 3 30 The hospital has been recognised by the Conjoint Board for England as a place where part of the fifth year may be devoted to clinical work All communications concerning clinical appointments, lectures hospital practice and fees should be addressed to the Secretary at the hospital

HOSPITAL FOR EPILEPSY AND PARALYSIS &C, Maida Vale W (85 beds) and Golders Green (100 beds for invalided soldiers) —Both in patient and out-patient departments of this hospital are open free to students as well as to medical graduates

Staff —Consulting Surgeons Sir A Pearce Gould and Mr G Lenthal Cheatle Consulting Ophthalmic Surgeon Mr W Laidlaw Purves Physicians Dr George Ogilvie, Dr Leonard Guthrie, Dr G F Johnston Dr H Campbell Thomson, and Dr Wilfred Harris Assistant Physicians Dr F L Golla Dr E G Fearnsides, and Dr Anthony Feiling Surgeon Mr A S Blundell Bankhart Gynæcological Surgeon Dr Victor Bonney Ophthalmic Surgeon Mr George W Thompson Surgeon for Diseases of the Ear, Nose and Throat Mr Francis F Muecke Dental Surgeon Mr Herbert Smale Pathologist Mr Herbert W Perkins Anæsthetist Dr A Beresford Kingsford. Secretary Mr H W Burleigh

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, PARALYSIS, AND EPILEPSY, 73, Welbeck street, W —Graduates in medicine and senior students may attend demonstrations in the Out-patient Department No fees are charged The physicians treating out-patients at present are Dr Harry Campbell, Dr Frederick S Palmer, Dr H Ridley Prentice, and Dr E W Scripture Dr Dundas Grant attends the Throat and Ear Department

The Savill Prize and Medal are at present in abeyance

Owing to the war, routine demonstrations by the staff have been discontinued for the present

BETHLEM ROYAL HOSPITAL, St George's Circus, S E —This hospital is open for the admission of two Resident House Physicians who have recently obtained their diplomas to practise Medicine and Surgery They are permitted to reside in the hospital for a term generally not exceeding six months commencing May 1st and Nov 1st and are provided with apartments, complete board, attendance, laundry, and a salary at the rate of £100 per annum They are under the direction of the Physician Superintendent and are elected by the Committee from candidates whose testimonials appear to be most satisfactory The students of certain specified London Medical Schools receive Clinical Instruction in the wards of the hospital and qualified practitioners and other students may attend for a period of three months on payment of a fee Physician Superintendent Dr Porter Phillips Assistant Physician Dr H L McCarthy

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton (333 beds) —The hospital contains 313 beds The Sanatorium at Frimley contains 100 beds and 50 beds for paying patients Six House Physicians reside in the hospital for a term of six months, their duties include attendance in the out-patient department Pupils are admitted to the practice of the hospital terms £1 1*s* for one month, three months, £2 2*s*, perpetual, £5 5*s* Clinical Demonstrations are given throughout the year by members of the medical staff Lectures have been suspended for the duration of the war Clinical Assistants are appointed to the Assistant Physicians in the out-patient department and Clinical Clerks to the Physicians in the wards The hospital has been recognised by the Conjoint Board for England as a place where six months of the fifth year may be spent in clinical work The medical practice of the hospital is also recognised by the University of London, the Apothecaries' Society, and the Army and Navy and Indian Medical Boards Consulting Physicians Sir Richard Douglas Powell Dr F T Roberts Dr J M Bruce, Dr T H Green Dr T D Acland Sir J K Fowler, Dr P Kidd and Dr H W G Mackenzie Physicians Dr F J Wethered, Dr P Horton Smith Hartley, Dr J J Perkins, Dr H Batty Shaw Dr W C Bosanquet, and Dr R A Young Assistant Physicians Dr C Wall, Dr W J Fenton Dr A J Jex Blake, Dr Burrell, and Dr Gosse Consulting Surgeon Sir R J Godlee Surgeon Vacancy Dental Surgeon Mr A E Ironside Surgeon to Throat and Ear Department Dr Dundas Grant Superintendent of Laboratories Dr A C Inman X Ray Department Dr S Melville Resident Medical Officer Dr Jones Dean of the Medical School Dr Cecil Wall

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST Victoria Park, E —During the past year 924 in patients have been treated in the wards The out-patients treated during 1915 numbered 7198 Consulting Physicians Dr Vincent D Harris Sir William S Church, Bart, Dr E Clifford Beale, Dr Harrington Sainsbury and Sir Hugh Beevor Bart Consulting Surgeon Mr H Morriston Davies Physicians Dr W J Hadley, Dr E H Colbeck, Dr Arnold Chaplin, Dr Hugh Walsham, Dr O K Williamson and Dr Clive Riviere Physicians to Out-patients Dr Eric Pritchard, Dr Sydney A Owen Dr Goodman Levy, Dr H B Carlill, and Dr A J Scott Pinchin Laryngologist Mr W G Howarth Radiographer Mr D M Stone Surgeon Dentist Mr Evelyn C Sprawson Secretary Mr George Watts Address "Secretary of the Medical Committee."

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E C (80 beds)—This hospital provides accommodation for 80 in patients Expenditure for 1916 £9000, income £10 000 The attendance of out patients averages 20 000 annually Consulting Physicians Dr P J Hensley Professor D W Finlay, Sir Wm Osler, and

Dr W H White Physicians Dr A Davies, Dr J Calvert, Dr M Leslie, Dr J H Drysdale, Dr A G Phear, and Dr H E Symes Thompson Assistant Physicians Dr Barty King and Dr Stott Consulting Surgeons Sir A Pearce Gould and Mr W Turner Surgeon Mr Arthur Evans Anæsthetist Mr H Drinkwater Clinical Pathologist Dr Carnegie Dickson Dental Surgeon Mr G Thomson Radiographers Dr A C Jordan and Dr Mowat Cardiologist Dr A W Stott Laryngologist Dr Mant Resident Medical Superintendent Dr A J Littlehales Secretary Mr A T Mays

The Mount Vernon Hospital for Consumption and Diseases of the Chest, Northwood, Central Out patient Department, Fitzroy square, W —The hospital contains 110 beds Number of in patients, 461, out-patients, 3279 Resident Medical Staff Clinical Demonstrations are given by the Visiting Medical Staff at the hospital at Northwood Clinical assistants are appointed to physicians in the wards and in the out patient department Physicians Dr George Johnston, Dr T N Kelynack, Dr T D Lister, Dr Alexander Morison, Dr Halls Dally, Dr Basil Price, Dr Reeve, and Dr R H Fox Surgeon Mr D O L Fitzwilliams Surgeon Laryngologist Mr J O Potter Radiographer Mr J S Part Secretary Mr W J Morton Offices 7, Fitzroy square, W

Queen Charlotte's Lying in Hospital and Midwifery Training School Marylebone road, N W —This hospital receives about 2000 patients annually, besides having a large out-patient department Medical pupils are received at all times of the year Pupils have unusual opportunities of seeing obstetric complications and operative midwifery, on account of the very large number of primiparous cases—nearly one half of the total admissions Clinical instruction is given on the more important cases which present themselves Certificates of attendance at this hospital are recognised by all the Universities, Colleges, and licensing bodies Pupil midwives and monthly nurses are received and specially trained A Residential College provides accommodation for five men at a time, students and qualified practitioners and is opposite the hospital, with which it is in telephonic communication Arrangements have been made for Medical Students to receive the preliminary instruction in Practical Midwifery recommended by the General Medical Council For further particulars application should be made to Mr Arthur Watts Secretary at the hospital Consulting Physicians Dr George B Brodie, Dr W S A Griffith Dr W J Gow, and Dr T W Eden Physicians to In patients Dr A F Stabb, Dr O Hubert-Roberts, Dr Thomas G Stevens, and Dr C White Physicians to Out-patients Dr J B Banister and Dr Wm Gilliatt Women students are received, and the Resident Medical Officers are women at present

The Hospital for Women Soho square, W —In connexion with the out-patient department there has been for some years a well-organised Clinical Department The appointments are open to qualified medical men and women Every facility is afforded them by the gynæcologists in the out-patient department of obtaining experience in diagnosis and treatment and the practical use of instruments Fee for one month £2 2s , for each subsequent month the same The hospital contains 67 beds In the out-patient department there were over 4000 new cases during the past year, the total number of out-patient attendances being 14,500 This large number affords exceptional opportunities for examining and studying most of the varieties of the diseases of women Applications should be made to the Secretary Gynæcologists Dr Bedford Fenwick, Dr James Oliver, Dr T G Stevens, Dr H J F Simson, and Dr Trevor B Davies Surgeons Mr D Drew and Mr L H McGavin Surgeon Dentist Mr W J May Anæsthetists Mr C J Ogle, Dr M Horne, Dr Pinto Leite, and Dr J B Mackenzie Pathologist and Registrar Dr Trevor B Davies Secretary Alfred Hayward

Samaritan Free Hospital for Women, Marylebone-road, N W —Qualified practitioners are admitted as clinical assistants to both the in and out-patient departments Demonstrations are given daily in both departments The fees payable in advance are £3 3s for three months Full particulars may be obtained on application to the Secretary at the hospital There are 70 beds Consulting Staff Dr A Routh Mr A H G Doran and Mr A. C Butler Smythe Physician Dr H W G Mackenzie Surgeons to In patients Mr J D Malcolm, Dr C H Roberts, Dr F J McCann, Mr C Keep, and Dr C Lockyer Surgeons to Out patients Mr J A Willett, Mr G F D Smith, Mr C White, Mr D W Roy, and Mr W Gilliatt Registrar Mr A W Bourne Anæsthetists Mr G A Jones, Mr H Robinson Mr R W Ironside, Captain C T W Hirsch, Mrs M Brady, and Mrs Croft Handley Resident Medical Officer Miss A. M Doherty Secretary Mr G H Hawkins

East London Hospital for Children and Dispensary for Women, Glamis-road, Shadwell E.—The hospital maintains 126 cots and on an average 245 out-patients are seen daily Clinical instruction is given by the physicians and surgeons to the hospital, which is recognised by the Conjoint Board for England as a school of medical teaching for students in the fifth year of the curriculum All particulars may be obtained on application to the Secretary Two clinical clerkships for qualified or unqualified students are open every three months subject to reappointment if desired Clinical assistants (qualified men only) are from time to time appointed in the out-patient ~~department. Any~~ additional information may be obtained on applying to Mr W H Wilcox, the Secretary, at the hospital Physicians Dr E Graham Little, Dr A M Gossage Dr Olive Riviere, and Dr T Fisher Surgeons Mr R Warren and Mr J E Adams Assistant Physicians Dr O K. Williamson, Dr R. S Frew, and Dr G Graham Assistant Surgeons Mr J E H Roberts and Mr C M Kennedy Ophthalmic Surgeon Mr F Juler Pathologist Dr E A. Ross Dental Surgeon Mr E S Pierrepont Medical Officer for the Electrical Department Dr Collis Barry Medical Officer for the Casualty Department Dr T B Jones Resident Medical Officer Mr K S Bhat Secretary Mr W M Wilcox

The Hospital for Sick Children, Great Ormond street W C , contains 210 beds, besides 30 beds at the Branch Hospital, Highgate The hospital having been recognised by the Conjoint Board for England as a place where under the new curriculum, six months of the fifth year may be spent in clinical work, the practice is arranged to meet this need and is open to students of both sexes who have completed four years of medical study and also to qualified medical men and women The medical staff are recognised by the University of London as teachers in Diseases of Children Appointments are made every three months to six medical clerkships, which are open to students of the hospital Clinical instruction is given daily by members of the visiting staff Fees for hospital practice, one month, £2 2s , three months, 5 guineas , perpetual ticket, 10 guineas Clinical Clerks, 1 guinea for three months Ophthalmological Clerkships —Clinical Clerks are appointed once a month Fees £1 1s for one month's attendance Pathological Clerkships —Facilities are afforded for obtaining theoretical and practical instruction in Clinical Pathology and Bacteriology in the Pathological Laboratories Clerks attend for about four hours daily Fees For one month, £3 3s , for two months, £5 5s , for three months, £6 6s A reduction is made in the case of those already holding tickets for general attendance at the hospital. Consulting Physician Sir Thomas Barlow, Dr F G Penrose and Dr A. E Garrod F R.S Physicians Dr F E Batten, Dr A F Voelcker, Dr W S Colman, and Dr G F Still Physicians to Out-patients Dr F J Poynton, Dr Robert Hutchinson, Dr H Thursfield, Dr T Thompson and Dr F Langmead Consulting Surgeons Mr John H Morgan and Sir W Arbuthnot Lane Surgeons Mr Thomas H Kellock, Mr Edred M Corner, Mr G E Waugh and Mr H A. T Fairbank. Surgeons to Out-patients Mr O L Addison, Mr H T Gray, and Mr L E Barrington Ward Ophthalmic Surgeon Mr W H McMullen Surgeon to Aural Department Mr G E Waugh Dental Surgeon Mr A T Pitts Radiographer Dr Ironside Bruce Local Medical Officer for Cromwell House Dr A M Henderson Acting Medical Registrar Dr Pirie Clinical Pathologist and Bacteriologist Dr D Nabarro Anæsthetists Mr Graham Scott Dr H S Sington Mr C J Loosely, and Mr H B Wilson Acting Resident Medical Superintendent Dr G Pirie. Secretary Mr Stewart Darmady

Evelina Hospital for Sick Children, Southwark Bridge road, S E —This hospital contains 76 cots and a very extensive Out-patient Department About ten clinical assistants (either sex), to work with the Honorary Medical Staff for Out-patients are appointed quarterly for a period of three months, there is no salary attached to these posts, but, on the other hand, no fees are charged Consulting Physicians Sir Frederick Taylor and Sir Nestor Tirard Consulting Skin Physician Dr S Ernest Dore Physicians Dr J Charlton Briscoe, Dr T R Whipham, and Dr D Forsyth Physicians in charge of Out-patients Dr H C Mann and Dr C E Sundell Physician in charge of Skin Department Dr H W Barber Consulting Surgeons Sir G H Makins, Mr F C Abbott, Mr A H Tubby, and Mr C H Fagge Consulting Aural Surgeon Mr G N Biggs Consulting Dental Surgeon Mr R. D Pedley Surgeons Mr H S Clogg and Mr C A. R Nitch Surgeons in charge of Out-patients Mr P Maynard Heath and Mr F D Saner Dental Surgeon (Vacant) Ophthalmic Surgeon Mr R E Bickerton Aural Surgeon Mr J F O Malley Anæsthetists Mr F D S Jackson and Mr H M. Pinto-Leite Radiographer Mr W. N Kingsbury House Physician Miss F Newman House Surgeon Miss S Daniel Casualty Officer Mr D V Halstead Secretary H O Staniland Smith

Victoria Hospital for Children, Tite-street Chelsea, S W —The hospital contains 104 beds and has a large out-patient department (over 1200 weekly), the home at Broadstairs has 50 beds, and the home at Biggin Hill, Kent, has 14 beds Consulting Physician Dr Ridge Jones Consulting Surgeons Mr Cowell, Mr Pickering Pick, and Mr D Arcy Power Physicians Dr Walter Carr, Dr H D Rolleston Dr Charles Miller, Dr Reginald Jewesbury, Dr Douglas Firth, and Dr E A. Cockayne. Physician to Skin Department Dr J M H MacLeod Surgeons Sir H F Waterhouse, Mr Fedde Fedden, and Mr Ralph Thompson Surgeons to the Out-patients Mr C M Page, Mr H Blakeway, and Mr Lancelot Bromley Ophthalmic Surgeon Mr C Devereux Marshall Dental Surgeon Mr Valentine Kay Anæsthetist Dr Schofield Electro Therapeutic and Radiographic Department Dr Stanley Melville Resident Medical Officer Miss N Tribe House Surgeon Mrs Neill House Physician Miss Parkinson Secretary Mr H G Evered Matron Miss J Watson Out-patients are seen as under —Diseases of the Eye Tuesday, 2 P M Diseases of the Skin Wednesday, 1 30 P M Whooping-cough Cases Friday 2.30 P M Medical and Surgical Cases Mornings at 9 30 Dental Cases Thursday, 1 30 P M Accidents and urgent cases are admitted at any time

The Queen s Hospital for Children (*late North Eastern Hospital for Children*) Hackney road Bethnal Green, E (Telephone 305 Dalston) For the sick children of the poor under 14 years of age Established 1867 134 beds in London and 30 at the seaside branch "Little Folks Home, Bexhill. —During the past year 2029 in patients and 42 225 out-patients (attendance 98 346) were relieved, 736 of the in patients being infants under two years of age Consulting Physicians Dr W Cayley Dr W Pasteur Dr W A Wills and Dr James Taylor Consulting Surgeons Mr Waren Tay, Sir R J Godlee, Mr Bilton Pollard Mr H Percy Dean, and Mr Douglas Drew Consulting Ophthalmic Surgeon Mr Sydney Stephenson Physicians Dr J Porter Parkinson, Dr Eric Pritchard and Dr Eric Bellingham Smith Assistant Physicians Dr Sidney Owen, Dr Alexander Gow and Dr T H G Shore (Dr Langton Hewer Surgeon Lieutenant Colonel A E Roberts Dr Alice Corthorn, Dr Elizabeth Wilks and Dr Alice King acting during the war) Surgeons Mr P Lockhart Mummery and Mr Stephen Fenwick Assistant Surgeons Mr Blundell Bankart and Miss Hilda Bousfield (acting for Mr Norman Lake during the war) Ophthalmic Surgeon Mr H Rowe Jeremy (acting during the war) Physician in charge of Skin Department Dr J L Bunch Surgeon in charge of the Ear Nose and Throat Department Mr J H Connolly (Mr C H Hayton acting during the war) Dental Surgeons Mr S F Rose and Mr Price Harris (Mr F R Flintan acting during the war) Medical Radiographer Dr E Ulysses Williams Pathologist and Registrar Dr Mildred Stogdon Resident Medical Officer Dr Hilda Bousfield Four other medical residents (men or women appointed half yearly)—viz, two House Physicians and two House Surgeons Matron Miss Bushby Secretary Mr T Glenton-Kerr The surgeons attend on Wednesdays at 1 45 P M and Fridays and Saturdays at 9 30 A M, the physicians daily at 1 45 P M, except Saturday, 9 30 A M, and Wednesday and Friday, 9 30 A M, as well as 1 45 P M A course of clinical demonstrations and lectures, open free to medical practitioners and students of medicine of both sexes, is usually given during the winter session

The Belgrave Hospital for Children Clapham road, S W —Clinical Assistants (men or women) are from time to time appointed to the members of the Visiting Staff attending in the Out patient Department at this hospital, and facilities are given for attendance in the wards Physicians Dr Edmund Cautley, Dr Stanley Wyard, and Dr A. Ridley Prentice. Surgeons Mr Sidney A Boyd, Mr Lionel E C Norbury, Mr N Bishop Harman, Mr H Graeme Anderson, and Mr Chad Woodward

Alexandra Hospital for Children with Hip Disease, Queen square, W C —At this hospital students who have obtained a recommendation from their teachers can attend to see the practice The out- and in patients' clinic is held on Mondays at 1 30 P M subject to alteration during the war Surgeons Sir Anthony Bowlby and Mr W. Girling Ball Visiting Medical Officer Mr H N Burroughes Assistant Surgeon Mr K J Acton Davis

Royal London Ophthalmic Hospital (Moorfields, 1804–1899) City road E C 138 beds —This hospital, known as Moorfields Eye Hospital, was moved in 1899 to larger buildings in City road In 1916 there were 2396 in patients the out-patients were 54,146 of whom 47 438 were new out-patients, and the attendances were 124,095 Operations are performed daily from 10 A M to 1 P M, and four surgeons attend on each day Students are admitted to the practice of the hospital Fee for six months, £3 3*s*, perpetual, £5 5*s* A special Clinical demonstration is given by a member of the staff in the out-patient department every morning Courses of instruction on the following subjects are given at the hospital periodically (1) examination of the eye, (2) the use of the ophthalmoscope, (3) errors of refraction, (4) external diseases of the eye, (5) surgical anatomy of the eye, (6) motor anomalies, (7) pathology of the eye, (8) practical pathology, (9) bacteriology, (10) operative surgery, and (11) X ray work A composition fee of £10 10*s* will entitle students of the hospital to a perpetual ticket, and will admit them once to all the above lectures and demonstrations except the classes on practical pathology bacteriology operative surgery and X ray work Students of the hospital are eligible for the offices of house surgeon or clinical and junior assistants Junior assistants are appointed every three months Any further information will be furnished by Mr Robert J Bland, Secretary Consulting Surgeons Mr J Couper Sir John Tweedy Mr W Tay Mr A. S Morton and Mr W Lang Consulting Medical Officer to the X Ray Department Sir James M Davidson Physicians Dr J Taylor and Dr Gordon M Holmes Surgeons Mr J B Lawford Mr E T Collins Mr W T H Spicer, Mr P Flemming, Mr J H Fisher Mr C D Marshall Mr J H Parsons Mr C Worth and Mr M L Hepburn Assistant Surgeons Mr A. C Hudson Mr R Foster Moore and Mr R. Affleck Greeves Dental Surgeon Mr R M Fickling Medical Officer to the X Ray Department Mr R Higham Cooper Curator and Librarian Mr F A Juler Bacteriologist Mr S H Browning Three Refraction Assistants, 3 Resident House Surgeons, Chief Clinical Assistants Clinical Assistants, and Junior Assistants

Royal Westminster Ophthalmic Hospital, King William street West Strand —The hospital contains 40 beds Out-patients who number over 15,000 annually are seen at 1 P M and operations are performed daily at about 3 P M The following are the days of attendance of the surgeons Mr Grimsdale and Mr Brewerton Mondays and Thursdays, Mr Roll and Mr McMullen Tuesdays and Fridays, and Mr Cruise, Mr Viner, and Mr Hine, Wednesdays and Saturdays The practice of the hospital is open to practitioners and students men and women Fees for six months £3 3*s*, perpetual, £5 5*s*, shorter periods by arrangement Students of the hospital are eligible for the posts of house surgeon assistant house surgeon pathologist, and clinical assistants Secretary Mr John Hy Johnson

Royal Eye Hospital, St George s circus, Southwark, S E —There are 40 beds and 2 cots There were 59,875 attendances in the Out-patient Department last year, and the new patients numbered 22,715 Out-patients are seen daily 1 30 to 2 30 P M Surgeons Sir William J Collins, Mr L V Cargill, Mr J Stroud Hosford, Mr E Brooksbank James, Mr E A Dorrell, Dr H Willoughby Lyle and Mr A D Griffith Physician Dr James Stansfield Collier Consulting Radiographer Dr J H Rhodes Pathologist Dr Effie Gordon Brander Dean Mr A D Griffith

Central London Ophthalmic Hospital, Judd street, St Pancras, W C —This hospital, which has lately been rebuilt, has 40 beds and possesses a well equipped laboratory and every facility for clinical teaching daily Last year there were 412 in and 10,364 out patients (entailing 28,097 attendances) The out-patient work begins at 1 o'clock, and operations are performed daily between 1 and 4 Consulting Physician Sir Dyce Duckworth Consulting Surgeons Mr A P L Wells and Mr Ernest Clarke Surgeons Mr Stephen Mayou, Mr J F Cunningham, and Mr A Levy *Assistant Surgeons* Mr F A Juler, Mr H P Gibb, and Mr M W B Oliver Physician Dr C O Hawthorne Pathologist Mr F A Juler Bacteriologist Dr W Armstrong Radiographer Dr R Salmond Dentist Mr E P May Secretary Mr H R S Druce

Hospital for Diseases of the Throat, Golden square, London, W, with which is amalgamated The London Throat Hospital, Great Portland street —The hospital contains 60 beds There is an out-patient attendance of over 50,000 yearly Clinical Instruction in the Diagnosis and Treatment of Disease is given in the out-patient department from 2 to 5 P M, on Tuesdays and Fridays from 6 30 to 9 P M From amongst the students Junior Clinical Assistants are selected, whose duty it is to assist the member of the staff to whom they are appointed Consulting Staff Mr T Mark Hovell Dr H Lambert Lack, Dr Edward Law and Mr E B Waggett Advisory Staff—Physicians Dr A C Latham and *Dr C E Lakin Neurologist* Dr E F Buzzard Ophthalmologist Mr W Lang Radiographer Dr W Ironside Bruce Surgeons Dr J W Bond Mr C A Parker, Mr C Woakes, Mr G C Cathcart Dr W H Kelson, Mr Jefferson Faulder, Mr George Badgerow, Mr Norman Patterson, and Mr Irwin Moore Assistant Surgeons Mr L Colledge, Mr F F Muecke, and Mr G W Dawson Dental Surgeon Mr A T Pitts Assistant Dental Surgeon Mr W G Oliver For terms and further information apply to the Dean, Mr Geo W Dawson

Central London Throat and Ear Hospital Gray s Inn road —In addition to the new In patient Department and operation theatre the hospital has a very extensive out-patient department, which is open to all medical practitioners and students for the purpose of clinical demonstration and instruction during the hours of the surgeons' visits During the past year 10,316 *out-patients* (involving close upon 50,000 attendances) and 573 in patients were treated The fee for three months' attendance is 5 guineas, for six months, 8 guineas The post-graduate teaching consists of successive series of practical demonstrations by the members of the staff delivered twice weekly during the winter and summer sessions They are so arranged that practitioners joining at any part of the course are enabled to complete the group of subjects A special Operative Surgery class is held at intervals The fee for each course is 2 guineas, with daily attendance at the out-patient department during the period of the course Details of subjects, &c, will be afforded by the Dean. Considerable attention is given to scientific work, particularly with regard to Bacteriology of the ear and respiratory passages Operation days in patients, Monday Tuesday, Wednesday Thursday, and Friday at 2 P M, out-patients, daily at 9 A.M Consulting Physician Dr Purves Stewart Consulting Surgeons Sir Watson Cheyne, Dr Dundas Grant, and Dr Percy Jakins Consulting Ophthalmic Surgeon Mr Stanford Morton Surgeons Mr Chichele Nourse, Dr Abercrombie, Mr Stuart-Low, Dr Andrew Wylie Dr Atkinson, and Dr McKenzie Assistant Surgeon Mr H Kisch Tuberculosis Department Mr John MacKeith Pathologist Dr Wyatt Wingrave Dental Surgeons Mr W Wallis and Mr Henning James Anæsthetists Dr Beresford Kingsford, Dr Mortimer, and Dr Cramp'on. Assistant Anæsthetist Dr Leslie Rawes In addition the following appointments are open to qualified members of the profession —Six Registrars, tenable for twelve months, and sixteen Clinical Assistants, tenable for three or six months Secretary Mr Richard Kershaw

The Metropolitan Ear, Nose, and Throat Hospital (1838) (incorporated) — The hospital was founded in 1838, and is situated in Fitzroy square, W The Out patient Department is opened daily at 2 30 P M to all medical practitioners and senior students for acquiring clinical instruction and technical knowledge. Operations upon in patients are performed on Tuesdays, Wednesdays Thursdays, and Fridays at 10 A M Fee for one month s attendance at the hospital £1 1s, and for three months £2 2s Clinical Assistants are appointed as vacancies occur, and have responsible duties Consulting Surgeon Mr J Pickett Surgeons Mr H Pegler, Mr F Spicer, Mr W J Horne, Mr J C Potter, and Mr H Buckland Jones Anæsthetists Mr C Looseley, Mrs Brady, and Mr C T W Hirsch Pathologist Mr A N Leathem. Dentist Mr J A Bowes

Royal Ear Hospital, Dean street Soho[1] (Founded 1816)—Courses of instruction of a practical character in Diseases of the Ear and Nose are given by the members of the staff throughout the year Clinical assistants are also appointed Students may join at any time. For information address the Honorary Secretary of the Medical Board, Royal Ear Hospital, Dean street Soho Surgeons Mr M. Yearsley, Mr Richard Lake, Mr R S Cocke, Mr E. A. Peters, Mr H A Kisch and Mr J F O'Malley *Physician and Pathologist* Dr J Burnford Ophthalmic Surgeon Mr H W Lyle Dental Surgeon Mr F W Barrett Anæsthetists Dr Harold Sington, Dr H B Wilson Mr W Howard Jones, Mr G W Gandy, and Mr J C Clayton Radiographer Mr J Shepley Part

St Mark s Hospital for Cancer, Fistula, and other Diseases of the Rectum, City road, E C (Founded 1835)—Honorary Surgeons Mr P Lockhart-Mummery, Mr Aslett Baldwin, and Mr C Gordon Watson Assistant Surgeons Mr H Graeme Anderson and Mr L. Norbury The hospital contains 52 beds for men and women. Operations are performed on Mondays, Wednesdays, and Thursdays at 2 30 P M Medical practitioners and students are *invited to the operations and to the* clinical instruction in the wards and in the out-patient department There is also a course of lectures once a year generally during the summer session, free to all qualified medical men particulars of which are announced beforehand. The number of out-patient attendances per year is 6900, and the average number of in patients 730

St Peter s Hospital for Stone and other Urinary Diseases, Henrietta street, Covent Garden Established 1860 New Hospital opened 1882 —Honorary Surgeons Mr F Swinford Edwards and Sir Peter Freyer Assistant Surgeons Mr John Pardoe, Mr J W Thomson Walker, and Mr J Swift Joly The hospital contains 30 beds for men and 2 beds for women and children Medical practitioners and students are invited to the clinical instructions which are given in the wards and out-patient department daily, and to the operations in the theatre on Wednesdays and Fridays at 2 P M Average beds occupied daily, 30, average out-patients seen daily, 125

St John's Hospital for Diseases of the Skin, 49, Leicester square, W C Rebuilt 1905 —The in patient department, 40 beds is at 262 Uxbridge road, W The out-patient practice is open to the medical profession of both sexes every day at 2 and every evening (except Saturday) at 6. At the afternoon clinics demonstrations on the different diseases presenting themselves are given. The X ray department is open on Tuesday and Thursday afternoons The Chesterfield Lectures are given on Thursdays at 6 P M, October to March, commencing Oct 11th. At the end of the course the Chesterfield medal may be competed for by those who have attended three fourths of the lectures Physicians Dr J L Bunch, Dr Morgan Dockrell, Dr W Griffith, and Dr Knowsley Sibley Surgeon Mr M K. Hargreaves. Electro-Therapeutist Dr C R. Kempster Special laboratory courses in Pathology and Bacteriology of the Skin may be arranged for

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[1] This hospital is at present handed over to the British Red Cross Society and will probably be retained by that society for the duration of the war

London Lock Hospital and Rescue Home.—In the Female Hospital at Harrow road W, there are 153 beds and 894 patients were admitted in 1916 In the Male Hospital and Out-patient Department in Dean street Soho W, there are 40 beds which during 1916 accommodated 461 patients. 36 500 out-patients were treated. Over 4000 injections of the substitutes for salvarsan were made in 1916 Patients are seen at Dean street on Mondays from 1 to 2 P M. and from 6 to 8 P M., on Tuesdays and Wednesdays from 6 to 8 P M, on Thursdays at 5 30–7 P M (female patients), on Fridays from 2 to 3 P M. (female patients), and on Saturdays from 2 to 4 P M (males). Consulting Surgeon Mr J A. Bloxam. Consulting Ophthalmic Surgeon Mr F E. Juler Physician Dr Sidney Phillips Surgeons Mr J Ernest Lane, Mr Arthur Shillitoe and Mr Charles Gibbs Surgeons to Out-patients Mr Ernest Lane Mr Charles Gibbs Mr Arthur Shillitoe. Mr Charles Ryall Mr Herbert J Paterson and Mr J E. R McDonagh. Registrar (Female Hospital) Mr J Johnston Abraham. Anæsthetist Mr J D Mortimer Physician Electro-Therapeutic Department Dr Charles Russ Pathologists Mr A. Fleming and Dr N S Bonard Dental Surgeon (Vacant) House Surgeon at the Female Hospital Mr P K. Murphy House Surgeon at Male Hospital and Out-patients' Department Mr J S Robinson. Secretary Henry J Eason. Head office 283, Harrow road W

ENGLISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS

Under this heading we include all the hospitals which are recognised by the English Royal Colleges for a part of the required attendance on medical and surgical practice, for medical clerkships and surgical dresserships The list includes nearly every hospital of a general character in the country having more than 150 beds, though occasionally a large hospital is admitted because equally good opportunities are afforded to students at other institutions in its neighbourhood while a small hospital may be included because no such facilities for study are present elsewhere. The list is arranged alphabetically as to the town where the hospital is located

Bath Royal United Hospital, Bath.—This hospital contains 130 beds, and possesses a fine library Consulting Physician Dr A. E. W Fox. Consulting Surgeon Mr R J H. Scott *Physicians* Dr G A. Bannatyne Dr T W Smith, and Dr E J Cave Assistant Physicians Dr G E Bowker, Dr L H Walsh and Dr R Waterhouse. Surgeons Mr H G Terry, Mr F Lace and Mr F Fraser Assistant Surgeons Mr W S Melsome, Mr A. L. Fuller and Mr W G Mumford Physician to Electrical Department Dr P King *Assistant Physician* to Electrical Department Dr G E Bowker Pathologist Dr R. Waterhouse Anæsthetist Mr A. de V Blathwayt. Assistant Anæsthetist Dr Ray Edridge. Dental Surgeons Mr W J Royal and Mr S Carter Secretary Mr J M Sheppard, F C I S

Bedford County Hospital, Bedford.—This hospital has 100 beds, with X Ray and Pathological Departments Consulting Physician Dr G P Goldsmith. Consulting Surgeon Mr E C Sharpin Physicians Dr R Coombs and Dr W Phillips. Surgeons Mr W Gifford Nash and Mr Henry Skelding Ophthalmic Surgeon Dr H. Goldsmith. Assistant Physicians Dr A. C Perram and Dr G T Birks Assistant Surgeons Dr S J Ross and Mr Walter Sharpin. Dental Surgeon Mr F W Williams House Surgeon Mr E V de Souza. Second Resident Medical Officer Mr Raymond Wyatt Secretary Mr Beauchamp Wadmore.

Bradford Royal Infirmary, Bradford.—This hospital contains 210 beds The material passing through the Surgical wards consists of major operations chiefly abdominal and gynæcological work, and affords excellent facilities for either students or post graduates Plans for a new hospital of 382 beds have been adopted, and the building operations will be commenced as soon as the funds in hand will allow Consulting Physicians Dr Herbert C Major Dr David Goyder Dr Richard Honeyburne and Mr Thomas Wilmo Physicians Dr Henry J Campbell Dr F W Eurich Dr J Beattie Dunlop Dr W Wrangham and Mr W Mitchell (in charge of Electrical Department). Consulting Surgeon Mr Harry Meade Surgeons Mr Charles F M Althorp Dr T Jason Wood, Mr J Basil Hall, and Mr James Phillips Consulting Gynæcologist Dr A. C F Rabagliati. Gynæcologist Mr Charles F M Althorp Consulting Laryngologist Dr Adolph Bronner Laryngologist Dr Andrew Little Assistant Surgeons Mr Francis W Goyder and Mr Peter McEwan Assistant Physicians Mr W Messer and Dr W N West-Watson Anæsthetists Dr W E Hayburn, Dr R A. Lankester, Mr J B Lockerbie, and Dr J D McCulloch. Consulting Pathologist Dr F W Eurich. Pathologist Mr B Hughes Consulting Dental Surgeon Mr Arthur A. Matthews Dental Surgeon Mr H Alvin Mahony

The Royal Sussex County Hospital, Brighton (265 beds) —This hospital affords ample facilities for students, possessing a large out-patient department a library, and a well appointed clinical research and bacteriological department The hospital does not take resident pupils but out pupils may attend the practice of the hospital for any period not exceeding two years on payment in advance of such a fee, not exceeding 20 guineas as the Board of Management shall direct Consulting Physicians Dr Hollis and Dr Branfoot Physicians Dr J F G Dill, Dr Hobhouse and Dr Maynard. Assistant Physicians Dr W Broadbent Dr D Hall and Dr Bailey Consulting Surgeons Mr N P Blaker Mr W Furner, and Mr T J Verrall Surgeons Mr R. F Jowers, Mr F J Paley, and Mr A. H. Buck Assistant Surgeons Mr T H Ionides, Mr W A. Bowring and Mr H. N Fletcher Honorary Medical Clinical Assistant Dr R. Clapham. Ophthalmic Surgeon Mr W W Griffin Dermatologist: Dr A. W Williams Dental Surgeon Mr W R. Wood. Acting Assistant Dental Surgeon Mr E W Badcock. Pathologist Dr H. M. Galt

Kent and Canterbury General Hospital Canterbury —The hospital contains 108 beds Pupils of the staff are admitted to the practice of the hospital and have the use of the library of the East Kent and Canterbury Medical Society for £7 7s An X-ray apparatus has recently been given to the hospital Operation day Thursday 11 A.M Physicians Dr Harold Wacher and Dr M. T Williams. Consulting Surgeons Mr Frank Wacher and Mr Z Prentice. Surgeons Mr Sidney Wacher, Mr E D Whitehead Reid, and Mr R J Ferguson House Surgeon Mr P A C Pattyn Dentist Mr R. S N Faro Secretary Mr Arthur J Lancaster

Derbyshire Royal Infirmary Derby —This hospital contains 260 beds It was founded in 1810 and was entirely rebuilt and enlarged 1892–1915 on the most modern lines at a cost of over £144 000 There is a separate ophthalmic block of 33 beds a separate children's block of 34 beds, and a special department for gynæcological cases There are three resident house surgeons and a resident house physician There is also a well-equipped Finsen light and X ray department. Registered medical students are admitted to witness the medical and surgical practice on payment of 10 guineas annually Consulting Physicians Dr Charles A Greaves and Dr G Rice Consulting Surgeons Mr John A. Sharp Mr Charles H. Hough, and Mr John L. Wright Physicians Dr Edmund Vaudrey Dr Maurice Parry-Jones and Dr Hugh Barber Surgeons Dr Richard H. Luce, Mr John A. Southern Mr Francis L. A Greaves, and Mr John E Kilvert Ophthalmic Surgeon Mr Edwin Collier Green Gynæcologist Mr Henry T Hicks. Anæsthetist Dr A. D Hunt. Consulting Anæsthetist Mr W St A. St John. Pathologist Dr Hugh Barber Dental Surgeons Mr Charles J Allin and Mr J Montague Murphy

Royal Devon and Exeter Hospital, Exeter —Medical and Surgical Staff Consulting Surgeons Mr J D Harris, Mr E J Domville and Mr Chas E Bell Physicians Lieut Col H. Davy and Dr William Gordon. Surgeons Mr A. C Roper and Mr Brennan Dyball Assistant Surgeon Mr A. L. Candler Assistant Physician and Pathologist Mr Reginald V Solly Surgeon Dentist Mr J M Ackland. Anæsthetists Mr Henry Andrew and Mr J Shirley Steele-Perkins Medical Officer in Charge of the Electrical Treatment Department Mr J Delpratt Harris Assistant Medical Officer in charge of the Electrical Treatment Department Mr Frank A. Roper Surgeon in charge of the Ear Throat and Nose Department Mr Robert Worthington. The hospital contains 200 beds (including special children's ward) and has a good library, museum, dissecting room, and post-mortem room. Attendance on the practice of this hospital qualifies for all the examining boards There is also a Private Nursing Staff attached to the hospital For particulars as to fees, &c , apply to the Matron A new wing was added in 1897 Arrangements may be made by which gentlemen in practice desiring to increase their qualifications may have the use of the museum and library and other facilities and by which students may attend midwifery A new Operating Theatre was opened in 1906 (the gift of Mrs Nosworthy of Newlands, Dawlish, Devon) The Electrical Treatment Department (the gift of Mrs M A Sanders) was opened in 1907 by Lady Duckworth King

WEST OF ENGLAND EYE INFIRMARY, Exeter —Physician Dr William Gordon Surgical Staff Mr A C Roper and Mr Ransom Pickard Assistant Surgeon Mr G P Hawker Secretary Mr W W Beer The infirmary contains 64 beds Students of the Exeter Hospital can attend the practice of the Eye Infirmary Patients for the year ending Michaelmas, 1916, 2232

THE GLOUCESTERSHIRE ROYAL INFIRMARY AND EYE INSTITUTION, Gloucester —This hospital, which was granted the title of "Royal" on the occasion of King Edward VII 's visit to Gloucester in the year 1909, has 140 beds Consulting Surgeons Mr T S Ellis, Mr R M Cole Mr H E Waddy Mr E Dykes Bower, and Mr G Wayland Ancrum Physicians Dr W W Grosvenor and Dr D E Finlay Assistant Physician Dr H Cairns Terry Surgeons Mr W Washbourn, Mr C V Knight and Mr Arnold Alcock Ophthalmic Surgeon Mr E Dykes Bower Assistant Surgeon (Vacant) Secretary Mr H P Pike In patients, 1739 , out-patients, 7333

NORTH STAFFORDSHIRE INFIRMARY, Hartshill, Stoke on Trent —The New Infirmary, opened in 1869 is built on the pavilion plan, has accommodation for about 240 patients, including Children's wards, and a special department for the treatment of Diseases of the Eye, a special X Ray and Electrical Department and a special department for the treatment of Diseases of the Ear, Nose and Throat, so that there are excellent facilities for acquiring a practical knowledge of the profession During the last six years the sum of £35,000 has been spent on new buildings and alterations A new Out-patient Department, costing £12,000, a new Children's Ward of 30 beds, a new Pathological Department, and a second large Operation Theatre are amongst the structural improvements already completed The whole institution is now equipped in a thoroughly up to date manner Honorary Consulting Physician Dr A M McAldowi Honorary Consulting Surgeons Mr W D Spanton and Mr G Stokes Hatton Physicians Dr S King Alcock, Dr H Nicholls, and Dr J Russell. Surgeons Mr Wheelton Hind Mr Reginald Alcock, and Mr W C Allardice Assistant Physicians Dr W E L Horner, Dr G H Sowry, and Dr E C Myott Assistant Surgeons Mr Harold Hartley Mr Eric E Young and Mr W Webster Consulting Ophthalmic Surgeon Mr H H. Folker Ophthalmic Surgeon Mr R. H. Dickson Assistant Ophthalmic Surgeon Mr S McMurray Medical Officers in charge of the Electrical Department Dr G H. List and Dr A H John Surgeon in charge of Ear, Nose, and Throat Department Mr G A Carter Dental Surgeon Mr J D Skae Honorary Anæsthetists Dr G Blair and Dr C. H Mott Secretary and House Governor Mr T. Basil Rhodes, M. B , B S

HULL ROYAL INFIRMARY Hull —This hospital contains 244 beds Consulting Physician Dr Edward O Daly Consulting Surgeons Sir John Sherburn, Mr Thomas M Evans Mr Robert H B Nicholson, and Mr Edmund H Howlett Consulting Dental Surgeon Mr J Charles Storey Consulting Ophthalmic Surgeon Dr W C Rockliffe Physicians Dr Frank Nicholson, Dr Frank C Eve, and Dr Edward Turton Surgeons Mr Alfred G Francis Mr Henry W Pigeon Mr Edward Harrison and Mr Edward M Hainworth Ophthalmic Surgeon Dr Duncan Mackay Assistant Ophthalmic Surgeon Mr William Bainbridge Assistant Surgeons Mr Harold Upcott Mr Robert Grieve and Mr Guy B Nicholson. Assistant Medical Officer Mr Stanley E Denyer Dental Surgeon Mr Arthur W Turton Assistant Dental Surgeon Mr Stanley R Storey Anæsthetists Mr Harry L Evans and Dr Arthur T Sissons

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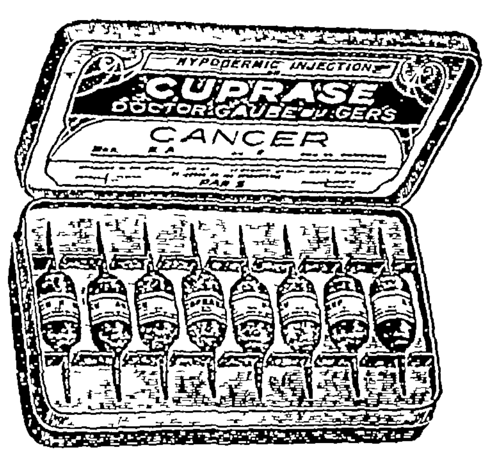

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The appointment of Resident Physician to the wards in the Royal Infirmary under the care of the Ordinary Physicians is open to those members of their clinical class who have held the office of clerk in their wards for at least six months Six Residentships are appointed for a period of six months each. Resident Surgeons are also appointed by the Ordinary Surgeons to the Hospital In all respects the students are taught under regulations similar to those at the University of Edinburgh and the other Universities of Scotland and they receive similar certificates at the close of each session The courses on *special non qualifying* subjects have for the last quarter of a century formed a marked feature of the school Indeed, such medical subjects could be studied in Edinburgh only in this school until lately, when the University of Edinburgh appointed from the school lecturers on Diseases of the Eye Insanity, and Diseases of Children to take charge of classes intra murally A list of the classes and lecturers will be found below Special courses of instruction for dental students and for women are also included in the curriculum of this school

Lecturers and Fees —Winter Session Anatomy Practical Anatomy, and Demonstrations, Dr Ryland Whitaker, Chemistry (Practical, &c.), Mr Gemmell and Dr T W Drinkwater , Physiology (Institutes of Medicine) Dr Alex. Goodall , General Pathology, &c Dr James Miller and Mr C R Whittaker , Zoology Mr H. Miller , Physics Dr Dawson Turner and Mr A. McKendrick , Meteorology Dr Dawson Turner and Mr A. McKendrick , Bacteriology, Dr Taylor Grant and Dr James Miller , Practice of Physic Dr R A Fleming Dr E Bramwell, and Dr A Dingwall Fordyce , Surgery, Mr Scot Skirving, Mr Chiene, Mr H Wade, Mr J W Struthers, Mr W J Stuart, and Mr L Beesly , Materia Medica, &c Dr Craig and Dr J Orr , Midwifery &c , Dr Hart, Dr Ballantyne, Dr Haig Ferguson, Dr Elsie Inglis Dr McGibbon, Dr Barbour Simpson, and Dr Davidson , Medical Jurisprudence, &c

Dr Aitchison Robertson, Public Health, Dr W Robertson, Hospital Practice (Edinburgh Royal Infirmary) Physicians, Sir R. W Philip Dr Graham Brown Dr F D Boyd, Dr R. A Fleming, and Dr Brewis for Gynæcology, Surgeons, Mr Hodsdon Mr Wallace Mr Miles and Mr Dowden, Clinical Medicine Sir R W Philip, Dr Graham Brown, Dr F D Boyd Dr R A Fleming, and Dr Brewis for Gynæcology, Clinical Surgery Mr Cathcart, Mr Hodsdon Mr Wallace, Mr Miles and Mr Dowden, Tuberculosis, Sir R W Philip (Clinical), Dr Miller (Pathological), Vaccination, Dr W G A Robertson and Dr Wm D D Small, Diseases of Ear Nose, and Throat Dr J Malcolm Farquharson and Dr J S Fraser, Diseases of the Eye, Dr J V Paterson, Ophthalmoscopy, Dr A. H H Sinclair, Gynæcology Dr Haig Ferguson and Dr Elsie Inglis (Systematic) Dr Brewis and Dr J Haig Ferguson (Clinical) and Dr J W Ballantyne (Advanced), Physical Methods, Dr A. D Webster, Medical Electricity, Dr Dawson Turner, Tropical Diseases Major D G Marshall, I M S, Diseases of Children, Dr A Dingwall Fordyce, Diseases of the Skin, Dr F Gardiner Summer Session Practical Anatomy and Demonstrations, Dr Ryland Whitaker, Practical Physiology, Dr Goodall, Biology, Mr M Laurie and Mr C R Whittaker, Practical Chemistry and Analytical Chemistry, Mr Gemmell and Dr Drinkwater, Practical Bacteriology Dr Taylor Grant and Dr James Miller, Materia Medica Dr Craig and Dr J Orr, Diseases of the Eye Dr J V Paterson; Medical Psychology and Insanity Dr John Keay, Medical Jurisprudence, Dr Aitchison Robertson, Public Health, Dr W Robertson, Gynæcology, Dr Brewis, Midwifery Lectures Dr Ballantyne Dr Haig Ferguson Dr McGibbon, Dr Barbour Simpson, and Dr Davidson, Practical Gynæcology Dr Elsie Inglis, Operative Surgery Mr Scot Skirving Mr Chiene, Mr H Wade, Mr J W Struthers, Mr W J Stuart, and Mr L Beesly, Practical Pathology Dr James Miller, Physics, Dr Turner and Mr A McKendrick, Practical Medicine and Physical Diagnosis Dr Fleming Dr A. Goodall, and Dr J D Comrie, Clinical Medicine, Sir R W Philip Dr Graham Brown, Dr Boyd Dr R. A. Fleming and Dr Brewis for Gynæcology, Vaccination Dr W G A. Robertson and Dr W D D Small Physical Methods Dr A D Webster, Diseases of Ear Nose and Throat Dr J Malcolm Farquharson and Dr J S Fraser, Tropical Diseases Major D G Marshall, I M S, Medical Electricity Dr Dawson Turner, Meteorology, Dr Dawson Turner and Mr A. McKendrick, Tuberculosis Sir R W Philip (Clinical) and Dr Miller (Pathological), Diseases of Children, Dr A Dingwall Fordyce, Diseases of the Skin Dr F Gardiner

The minimum cost of the education in this School of Medicine for the Triple Qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow including the fees for the Joint Examinations is about £120 payment of which is distributed over the period of study There is no composition fee

Further particulars regarding the school also its calendar may be had on application to the Dean of the School, 11, Bristo place Edinburgh

N B.—Where two or more lecturers appear as teaching the same subjects their lectures are not conjoined but each gives an independent course.

Clinical Instruction —ROYAL INFIRMARY Edinburgh —This hospital has 921 beds and 42 cots for children Courses of Clinical Medicine and Surgery are given by the physicians and surgeons to male and female students Special instruction is given on Diseases of Women Physical Diagnosis Diseases of the Skin Diseases of the Eye the Ear the Larynx and the Teeth Separate wards are devoted to Venereal Diseases Diseases of Women Diseases of the Eye the Ear Throat and Nose and the Skin and also to cases of Incidental Delirium or Insanity There are also large and complete Medical Electrical and X Ray and Bathing Departments Post mortem examinations are conducted in the anatomical theatre by the pathologist and his assistants who also give practical instruction in Pathological Anatomy and Histology The fees for hospital attendance are as follows—viz Perpetual ticket in one payment £12, annual ticket £6 6s, six months £4 4s, three months £2 2s monthly £1 1s Separate payments amounting to £12 12s entitle the student to a life ticket No fees are paid for any medical or surgical appointment The appointments are as follows 1. Resident physicians and surgeons are appointed and live in the house free of charge The appointment is for six months but may be renewed at the end of that *period by special recommendation* 2 Non resident house physicians and surgeons and clinical assistants are appointed for six months The appointment may be renewed for a like period by special recommendation 3 Clerks and dressers are appointed by the physicians and surgeons These appointments are open to all students and junior practitioners holding hospital tickets 4 Assistants in the Pathological Department are appointed by the pathologist.

Staff —Consulting Physicians Sir James Affleck Dr Alexander James, Dr Byrom Bramwell, and Emeritus Professor W S Greenfield Physicians Sir Thomas R Fraser, Sir R W Philip Professor William Russell Professor Lovell Gulland Dr Graham Brown, Dr F D Boyd, Dr R A. Fleming and Dr Harry Rainy Assistant Physicians Dr Chalmers Watson, Dr Edwin Bramwell, Dr Edwin Matthew, Dr W T Ritchie, Dr John Eason, Dr John D Comrie and Dr Alex. Goodall Consulting Surgeons Mr A. G Miller Dr C W MacGillivray, Emeritus Professor John Chiene C B, and Mr J M Cotterill Extra Surgeon Mr C W Cathcart Surgeons Mr F M Caird Mr J W B Hodsdon Mr David Wallace, Mr Alexis Thomson, Mr Alexander Miles Mr John W Dowden, and Mr A. A. Scot Skirving Assistant Surgeons Mr George Chiene, Mr W J Stuart, Mr J W Struthers Mr Henry Wade Mr D P D Wilkie and Mr Denis Cotterill. Consulting Gynæcologist Professor Sir Halliday Croom Gynæcologists Dr A. H F Barbour and Mr N T Brewis Assistant Gynæcologists Dr J Haig Ferguson and Dr William Fordyce Physicians to the Skin Department Dr Norman Walker and Dr Fred Gardiner Assistant Physician to the Skin Department Dr R Cranston Low Consulting Surgeons to the Ophthalmic Department Sir George A Berry and Dr George Mackay Surgeons to the Ophthalmic Department Dr W G Sym and Dr J V Paterson Assistant Surgeons to the Ophthalmic Department Dr A H H Sinclair and Dr H M Traquair Consulting Surgeons to the Ear and Throat Department Dr P M Bride and Dr R M Kenzie Johnston. Surgeons to the Ear and Throat Department Dr A. Logan Turner and Dr J Malcolm Farquharson Assistant Surgeons to the Ear and Throat Department Dr John S Fraser and Dr John D Lithgow Consulting Surgeon to the Dental Department Mr William Guy Surgeon to the Dental Department Mr J H Gibbs Extra Medical Electrician (for Radium Cases) Dr Dawson Turner Medical Electricians Dr W Hope Fowler and Dr Archibald M Kendrick. Pathologist Professor Lorrain Smith Clinical Pathologist, Miss Fitzgerald Assistant Pathologists Dr James Miller and Dr J W Dawson

ROYAL HOSPITAL FOR SICK CHILDREN, Sciennes-road, Edinburgh —This hospital contains 120 beds, and is fitted with every modern improvement A fully equipped outpatient department (medical and surgical) is conducted daily in a building adjoining the hospital Systematic courses of instruction which qualify for graduation in the Edinburgh University and elsewhere are given from time to time throughout the year by the staff Students may enter at any time Full particulars can be obtained from the Registrar at the hospital

Staff —Consulting Physicians Dr J Carmichael, Dr J Playfair and Dr T M. Burn Murdoch. Consulting Surgeon (vacant). Consulting Surgeon Dentist (vacant) Consulting Pathologist Professor J Lorrain Smith. Consulting Bacteriologist Professor J Ritchie Ordinary Physicians Dr J Thomson Dr J S Fowler and Dr J W Simpson Surgeon Mr H J Stiles Ophthalmic Surgeons Sir G A Berry and Dr A. H. Sinclair Assistant Surgeon Mr J Fraser Surgeon to Ear and Throat Department (vacant) Medical Electrician Dr J W Spence Extra Physicians Dr Dingwall Fordyce, Dr C McNeil and Dr Norman S Carmichael Anæsthetists Dr M H Howard Jones and Mr J Larsen

EYE EAR AND THROAT INFIRMARY OF EDINBURGH 6 Cambridge street, Lothian road —Clinical Lectures and Instruction are given in this institution, which is open at 1 o clock daily for outdoor patients for Eye Diseases, Mondays Thursdays, and Saturdays at 12 noon and Tuesdays and Fridays at 4 P M for outdoor Ear, Nose, and

Throat Patients Special Practical Ophthalmoscopic Classes by arrangement Patients whose diseases require operations or more than ordinary care are accommodated in the house Consulting Surgeon Dr Logan Turner (Ear, Nose, and Throat Department) Surgeons Dr William George Sym, Dr J V Paterson Dr E M Lithgow, Dr W T Gardiner, Dr John M Darling and Dr Ernest H Cameron Honorary Anæsthetist Mr J H Gibbs Dental Surgeon Mr G W Watson Treasurer and Secretary Mr J P Watson, W S , 32, Charlotte square

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UNIVERSITY OF GLASGOW

The University of Glasgow is both a teaching and a *degree-granting* body, but admits to graduation only candidates whose preliminary examination and course of study conform to its own regulations Within certain limits instruction given by recognised medical schools and teachers may be accepted, but not less than one-half of the subjects other than clinical must be taken in this or some other recognised university, and at least two years of the course must be taken in Glasgow University Six degrees, open both to men and women, are conferred M B and Ch B (always conjointly), M D and Ch M , B Sc in Public Health , D Sc in Public Health , and B Sc in Pharmacy A Preliminary Examination must be passed in (1) English, (2) Latin, (3) Elementary Mathematics, and (4) Greek, or French, or German, or Italian, with possible options to students whose native language is not English Candidates taking the University preliminary examination are not obliged to pass in all the four subjects at one examination, but must do so at not more than two occasions

For the degrees of M B and Ch B a curriculum of five years is required The candidate must during his curriculum, have attended a course or courses of instruction in each of the following subjects of study, extending over not less than the number of terms specified in each case and including such class examinations as may be prescribed in connection with the several courses —*Chemistry* (including Organic Chemistry), two terms , with Practical Chemistry one term , Physics (with practical work), one term , Botany (with practical work), one term , Zoology (with practical work), one term , Anatomy and Practical Anatomy five terms , *Physiology and Practical Physiology, three terms* , Materia Medica and Therapeutics (together or separately) each subject, one term , Pathology and Practical Pathology, three terms , Medical Jurisprudence and Public Health (together or separately), each subject, one term , Midwifery and *Diseases peculiar to Women and to Infants*, two terms , Surgery two terms , Medicine, two terms Candidates must attend at least three years the Medical and Surgical Practice of a recognised hospital accommodating at least 80 patients and having a distinct staff of physicians and surgeons At *least nine months hospital* attendance is required on both Clinical Surgery and Clinical Medicine, and the student must have acted for six months as clerk in medical and dresser in surgical wards, and must have had six months outdoor practice , he must also have attended a course of Mental Diseases and of Practical Pharmacy (25 meetings), must have been properly instructed in Vaccination at a public vaccination station, and must have attended at least 20 cases of labour and the Practice of a Lying in Hospital The University also requires further study in various special subjects

There are four Professional Examinations, the first comprising Botany, Zoology, Physics and Chemistry , the second comprising Anatomy and Physiology , the third comprising Materia Medica and Therapeutics and Pathology , and the fourth or final, comprising Medical Jurisprudence and Public Health Surgery and Clinical Surgery, Practice of Medicine and Clinical Medicine, and Midwifery and the Diseases peculiar to Women and to Infants

The degrees of M D (Doctor of Medicine) and Ch M (Master of Surgery) are higher degrees in Medicine and Surgery respectively, and candidates (not under 24 years of age) who have previously obtained the double bachelorship may be admitted to either M D or Ch.M on completing the after course prescribed, including an examination in Clinical Medicine for M D and an examination in Surgical Anatomy operations on the dead body, and Clinical

Fees —The Fees for M B and Ch B are £23 2*s* The class fee in each subject of the curriculum for M B and Ch B is £2 2*s* , £3 3*s* , or £4 4*s* , and the present fees for hospital attendance are £10 10*s* The fee for M D is £15 15*s* , and for Ch M £15 15*s*

The great majority of the students take their hospital course at the Western Infirmary, or the Royal Infirmary, where clinical instruction is given by professors of the University and others Clinical instruction on Fevers is given at Ruchill and Belvidere Hospitals, while special courses, largely of a practical nature and embracing work in Hospital or Asylum wards are conducted by University Lecturers on the Ear, the Throat and Nose, Dermatology, Ophthalmology, Venereal *Diseases*, and *Insanity* Queen Margaret College, sometime conducted as a separate institution for the higher education of women, was made over to the University in 1892, and in it medical classes for women are conducted under University professors and other lecturers appointed by *the University Court*, whilst for clinical instruction female students are admitted to the Royal Infirmary

Professors—Natural Philosophy A Gray LL.D , F R.S. Materia Medica Ralph Stockman, M D Chemistry (Vacant) Surgery Sir William ~~Macewen, M D~~ , F R S , and Robert Kennedy, M D , D Sc Practice of Medicine T K Monro, M D , and W K Hunter, M D , D Sc. Midwifery Murdoch Cameron, M D , and J M Munro Kerr, M D Anatomy Thomas H Bryce, M D Zoology John Graham Kerr, F R S Botany F O Bower, D Sc., F R S Physiology D Noël Paton B Sc M D , F R.S. *Forensic Medicine John Glaister, M D Pathology* Robert Muir, M D , F R S , and J H Teacher M D

In this University Bursaries and Prizes to the annual amount of over £1000 are appropriated to students in the Medical Faculty, and there are also several Scholarships and Fellowships which may be held by medical students who have gone through the Arts course A full list will be found in the University Calendar

THE ANDERSON COLLEGE OF MEDICINE, Dumbarton road, Glasgow, W —The following courses are given, which *qualify for all the licensing boards and for the* Universities of London, Durham, Edinburgh, and Glasgow (the latter two under certain conditions) —In winter Anatomy and Practical Anatomy (Vacant) , Physics, Prof P Bennett, Chemistry, Prof J R Watson , Botany, Prof. B. G *Cormack , Zoology Prof* W F Mackenzie , Physiology Prof H Morton , Materia Medica, Prof J P Duncan, Midwifery and Diseases of Children, Prof Wm D Macfarlane , Surgery Prof Arch Young , Practice of Medicine, Prof J M Cowan , Ophthalmic Medicine and Surgery, Prof A J Ballantyne , Aural Surgery, Prof. J G Connal , Diseases of Throat and Nose, Prof. John Macintyre , Public Health (Laboratory Course) Prof C C Douglas , Dermatology, Prof J G Tomkinson , Dental Bacteriology, Prof C C *Douglas* , Dental Surgery and Pathology Dr J Watt , Dental Anatomy and Physiology, Dr W Wallace , Dental Metallurgy Dr Charles Read. In summer Anatomy Practical Anatomy, and Osteology , Practical Chemistry , Botany and Practical Botany , Zoology and *Practical* Zoology , Practical Physiology , Practical Materia Medica and Pharmacy , Medical Jurisprudence (*Prof C C* Douglas), Diseases of Women (Prof Wm D Macfarlane), Operative Surgery , Ophthalmic Medicine and Surgery , Aural Surgery , Mental Diseases (Dr Ivy Mackenzie), and Public Health (Lecture Course and Laboratory Course). Candidates for the Licence in Dental Surgery can obtain the full medical curriculum in Anatomy, Chemistry, Physiology, Surgery, Practice of Medicine, and Materia Medica The courses special to Dentistry are also conducted in the Anderson College of Medicine

The buildings are situated in Dumbarton road, immediately to the west of the entrance to the Western Infirmary, and adjoining the University Extensive accommodation is provided for Practical Anatomy Practical Chemistry, Practical Botany, Practical Zoology, Practical Physiology, Practical Pharmacy, Operative Surgery and Public Health Ample provision has also been made for the comfort of students

Women students are admitted on the same terms as men

The Carnegie Trust extends its benefactions to students of the Anderson College of Medicine Full particulars may be obtained from Sir W S McCormick, the Carnegie Trust Offices, Merchants Hall, Edinburgh

Communications relating to the College to be addressed to the Secretary of the Medical Faculty The Anderson College of Medicine, Glasgow W Communications relating to the Preliminary Examination in General Education to be addressed to Mr Hugh Cameron, M A, F E I S Educational Institute Office, 34 North Bridge street Edinburgh Communications relating to the Triple Qualification to be addressed to Mr Alexander Duncan, B A, LL.D, Royal Faculty Hall, 242, St Vincent-street, Glasgow

The Winter Session will open on Monday Oct 15th, 1917, and will close on Thursday March 21st, 1918

The Summer Session will open on Wednesday April 24th, 1918, and will close on Wednesday, July 3rd, 1918

ST MUNGO S COLLEGE AND GLASGOW ROYAL INFIRMARY —The classes in St Mungo s College qualify for the English, Scotch, and Irish Conjoint Boards and, under certain conditions, for the various universities, including the University of London Students who have fulfilled the conditions of the Carnegie Trust as regards Scottish birth or extraction age (16 years) and Preliminary Examination are eligible for the benefits of this Trust during the whole course of their studies at St Mungo's College The classes are open to male and female students equally The minimum fees for all the lectures including hospital attendance necessary for candidates for the Diplomas of the English or Scotch Colleges of Physicians and Surgeons, amount to £65 Further particulars can be obtained from a syllabus which may be procured free on application to the Secretary of the Medical Faculty, 86, Castle street, Glasgow

GLASGOW WESTERN MEDICAL SCHOOL —This School has been closed during the war

QUEEN MARGARET COLLEGE, University of Glasgow (Women's Department of the University) —The classes are taught by professors of the University and other lecturers appointed by the University Court, and it is governed by the University Court and Senate The curriculum, regulations, and fees are the same as those of the male students, and the University degrees are open to women on the same conditions as to men They have access to the University Museum and can borrow books from the University Library, besides having a library of reference in Queen Margaret College The School of Medicine is a special feature of the College, and gives full preparation for the medical degrees of the University In July 1894 for the first time in the history of any Scottish University women students graduated in medicine in Glasgow University 234 women have now taken the degree of M B C M or M B, Ch.B of the University of Glasgow and 23 the degree of M D The women students attend classes in the various University Buildings at Gilmore hill Queen Margaret College and the Royal Infirmary Owing to the increase in the number of women medical students additional accommodation for session 1917–18 is provided for the classes of Chemistry and Anatomy in Queen Margaret College Excellent facilities for clinical work are given in the Royal Infirmary in the Maternity and other hospitals The Arthur Scholarship is open every third year to students of first year, other Bursaries are open in Arts and Medicine, and by an ordinance of the Universities Commissioners women are admitted to certain University bursaries, scholarships, and fellowships There is a house of residence for the students of the College coming from a distance The Winter Session will open on Oct 15th

ROYAL INFIRMARY Glasgow —The ancient connexion between the University of Glasgow and the Royal Infirmary was revived in 1911 when four University Chairs and several University Lectureships were established at the infirmary St Mungo s College is situated in the infirmary grounds The infirmary has including the Ophthalmic Department 835 beds There are special beds and wards for diseases of women of the throat, nose and ear, skin venereal diseases burns and septic cases The wards are open to Women Students At the Out-door Department the attendances in 1916 numbered over 137 000 In addition to the large medical and surgical departments there are departments for special diseases—viz diseases of women of the throat and nose, of the ear of the eye of the skin and of the teeth. Five house physicians and 12 house surgeons having a legal qualification in medicine and surgery, who board in the hospital free of charge, are appointed every six months Clerks and dressers are appointed by the physicians and surgeons As a large number of cases of acute diseases and accidents of a varied character are received these appointments are very valuable and desirable There is a modern and fully equipped Electrical Pavilion, and year by year the latest and most approved apparatus for diagnosis and treatment has been added The fees are as follows (*a*) For hospital practice, including attendance at the out door department at the pathological department, post-mortem examinations, and the use of the museum Perpetual ticket, £7, six months, £2 2*s*, three months, £1 1*s*; separate payments amounting to £7 7*s* entitle the student to a perpetual ticket, on return of previous season tickets, (*b*) for Clinical Lectures, six months, £3 10*s*, three months, £1 15*s*, (*c*) Vaccination £1 1*s*, Pathology, £4 4*s*, Bacteriology, £2 2*s*

Staff —Honorary Consulting Physicians Dr J W Anderson, Dr J D Maclaren, Sir David C McVail, Dr G S Middleton, Dr Alex Morton (diseases of the skin), Dr Robert Perry, and Dr A Wood Smith Honorary Consulting Surgeons Dr John Barlow Dr David N Knox Dr Quintin McLennan, and Dr David Newman Visiting Physicians Dr W K Hunter, Dr John M Cowan, Dr Mackenzie Anderson, Dr Wm R Jack, and Dr John Henderson Visiting Surgeons Mr J A. Adams, Mr J H Pringle Mr H Rutherfurd, Mr Peter Paterson, Dr Robert Kennedy, Dr A N McGregor, and Mr Thomas Kay Assistant Physicians Dr James Scott, Dr Archd W Harrington, and Dr W Watson Assistant Surgeons Mr John Patrick and Mr John A C Macewen Dispensary Physicians Dr D H Macphail, Dr Arthur Crawford, Dr David Macdonald, Dr John C Middleton, and Dr A. M Kennedy Dispensary Surgeons Mr A. G Faulds, Mr James Battersby, Mr Donald Duff, Mr Milne McIntyre, Mr Alex. J Couper, and Mr Robert S Dewar Extra Dispensary Physicians Dr Agnes Picken, Dr T S Barrie, and Dr J M Morgan Extra Dispensary Surgeons Mr Wm C Mackie, Mr J A G Burton, Mr P H Robertson, Dr James Taylor and Dr J MacIntyre Consulting Surgeon for Diseases of the Eye *Dr A Maitland Ramsay* Surgeon for Diseases of the Throat and Nose Dr John Macintyre Gynæcologists Dr Balfour Marshall and Dr J M Munro Kerr Surgeon for Diseases of the Ear Dr J Kerr Love Physician for Diseases of the Skin Dr George McIntyre Pathologist Dr J H Teacher Assistant in Pathological Institute Dr J A G Burton Bacteriologist Dr J A Campbell Medical Electrician Mr J R Riddell Assistant Medical Electricians Dr Samuel Capie Dr Katharine M Chapman Dr J G Graham, and Dr A. M Kennedy Anæsthetists Dr H P Fairlie, Dr F L Napier Dr A S Richmond, Dr Ellen Brown Orr, and Mr W Laird Vaccinator Dr H H Borland Dispensary Specialists —Diseases of Women Dr James Taylor, Dr A. L McIlroy, and Dr James Hendry Diseases of the Ear Dr James Adam, Dr James Harper, and Dr John W Leitch, Diseases of the Skin Dr G McIntyre, Diseases of the Throat and Nose Dr P N Grant and Dr John Donald, Diseases of the Teeth Mr W Taylor and Mr W R Taylor, Venereal Diseases, Dr David Watson and Dr John Gilchrist Ophthalmic Department —Surgeons Dr Maitland Ramsay and Dr John Rowan, Assistant Surgeons Dr H W Thomson Dr John Gilchrist Dr J A. Wilson, and Dr W H Kiep, Extra Dispensary Surgeons Dr Andrew Ross Muir, Dr T S Barrie, and Dr E B Orr, Electrician Dr Gilchrist, Pathologist Dr John H Teacher, Anæsthetist Dr R H Henderson, Superintendent Dr J Maxtone Thom, Secretary and Cashier R Morrison Smith, C A, 135, Buchanan street, Glasgow

GLASGOW WESTERN INFIRMARY —This hospital adjoins the University of Glasgow Number of beds upwards of 600 Special wards are set apart for Diseases of Women and for Affections of the Skin In the out-patient department there are special cliniques for Diseases of Women and for Diseases of the Throat Ear Teeth, and Skin The Clinical Courses are given by the physicians and surgeons, each of whom conducts a separate class and students require to enter their names at the beginning of the session for the class which they propose to attend Special instruction is given to junior students by tutors or assistants, and clinical clerks and dressers are selected from the members of the class All the courses of clinical instruction are recognised by the University of Glasgow and the other boards in the kingdom In the Pathological Department the course is both systematic and practical, also post-graduate courses, and extends through the winter and following summer, these are likewise recognised by the University for graduation Fifteen resident assistants are appointed annually, without salary from those who have completed their course The fee for hospital attendance is £7 and the fees for clinical instruction are £3 3s for the Winter Session and £2 2s for the Summer Session A Clinical Laboratory has been opened and students will receive laboratory instruction from the lecturer on clinical methods

Staff —Honorary Consulting Surgeons Sir Hector C Cameron and Sir George T Beatson Honorary Consulting Gynæcologist Dr W L Reid Visiting Physicians Dr Ralph Stockman, Dr Wm MacLennan, Dr R Barclay Ness Dr T K Monro and Dr J W Nicol (Skin Department) Visiting Surgeons Sir W *Macewen* Sir Kennedy Dalziel, Dr Duncan Macartney *Mr G H* Edington Dr John Morton and *Dr Archibald Young* Gynæcologist Dr Murdoch Cameron Assistant *Physicians* Dr James Carslaw, Dr John S M'Kendrick, *Dr Frank* Charteris and Dr John Gracie *Assistant Surgeons Dr* M Logan Taylor D C C Cathbert *and Dr* Alex H Edwards Dispensary Physicians *Dr John P Duncan,* *Dr Geo* Allison Allan *Dr Jas R C Greenlees* Dr G H Clark *and Dr D R Kilpatrick* *Dispensary* Surgeons Dr R B Carslaw, Dr *David Dickie,* Dr Wm Rankin Dr J M Renton *Dr Roy* Young and Dr W A Campbell *Honorary Anæsthetists Dr* James P Boyd Dr R Home *Henderson, and Dr H P Fairlie* Dispensary *Gynæcologists Dr S Cameron and Dr* Jas H Martin Extra Dispensary Physicians *Dr* G B Fleming, Dr Hugh Morton Dr J W *McNee and D* Adam Patrick Dispensary *Physician for Diseases* of the Skin Dr J G Tomkinson *Extra Dispensary* Surgeons Dr W A Sewell and *Dr Chas Bennett* Surgeon for Diseases of the Ear Dr Albert A *Gray* Surgeon for Diseases of the Throat and Nose Dr Walker Downie Honorary Consulting Physician for Mental Disorders Dr L R Oswald Honorary Consulting Medical Electrician Dr D J Mackintosh Medical Electricians Dr J G Tomkinson, Dr Archd Hay, and Dr W F Somerville Pathologist Dr Robert Muir Clinical Pathologist Dr J S Dunn Assistant Pathologists Dr Geo Haswell Wilson and Dr J W McNee Vaccinator Dr J L Carstairs Dental Surgeon Mr W D Woodburn L D S Superintendent Dr D J Mackintosh Matron Miss H Gregory Smith, R R C Secretary and Treasurer J Matheson Johnston C A 87 Union street

Royal Hospital for Sick Children, Yorkhill, Glasgow —This institution, which was founded in 1882, consists of (1) a hospital at Yorkhill containing 204 cots built on an elevated and central site close to the University and opened in July, 1914, (2) a Dispensary or Out patient Department, in West Graham street, opened in October, 1888, and (3) a country branch at Drumchapel, Dumbartonshire, containing 24 cots opened in 1903 Children treated must be under 12 years of age and suffering from non infectious diseases In the hospital, part of which is at present used as a military hospital for officers, about 5000 children are treated annually In the Out-patient Department over 12 000 are treated annually involving nearly 50 000 attendances *Hospital and Country Branch* —Honorary Medical Officers —Consulting Physicians Dr George S Middleton Dr R Barclay Ness, and Dr J B Mackenzie Anderson Consulting Surgeons Sir Kennedy Dalziel, Mr R H Parry, and Mr James H Nicoll Consulting Pathologist Professor Robert Muir Visiting Physician Dr Leonard Findlay Visiting Surgeons Mr Alfred A Young and Mr Alexander MacLennan Aurist and Laryngologist Dr J Walker Downie Oculist Dr John Rowan. Dentist Dr Leslie C Broughton-Head Pathologist Dr W Blair M Martin *Dispensary* —Honorary Medical Officers —Physicians Dr A Bankier Sloan Dr James R C Greenlees Dr James Girdwood, Dr Agnes W Cameron Dr W Hendrie Kirk, Dr Geoffrey B Fleming Dr J W McNee, Dr Samuel J Moore Dr Mary T Moore, Dr Ethel Crawford, and Dr Mabel Jones Surgeons Dr. M Logan Taylor, Dr William Rankin Dr David Dickie, Dr William A. Campbell, Dr J Mill Renton, Dr Charles Bennett, and Dr William A Sewell Aurist and Laryngologist Dr James Harper Oculist Dr Walter H Kiep Dentist Dr Leslie C Broughton Head Information with regard to clinical instruction, lectures, demonstrations, &c., may be obtained from the Medical Superintendent

Glasgow Royal Maternity and Women's Hospital, Rotten row —The new hospital which was opened in 1908 is in point of size the largest of its kind in Britain and has accommodation fo 108 patients During the past year a Maternity and Child Welfare Centre has been established in connexion with the hospital, consisting of a complete In door and Out-door Ante natal Department and an Infant Consultation Clinic In 1916 2264 normal cases and 1308 abnormal cases were treated by the hospital in the In door and Out-door Departments Senior students are allowed to attend the hospital for clinical instruction and practical work on payment of a fee of £5 5s A post graduate course is conducted by the obstetric physicians. The proportion of abnormal cases admitted is very large, as there are exceptional opportunities for post-graduate work. Fees One month £3 3s, six months, £6 6s, one year £10 10s Students and graduates are accommodated in the residence in connexion with the hospital

Medical Staff —Visiting Obstetric Physicians Professor Murdoch Cameron Dr Robert Jardine, Professor J M Munro Kerr, and Dr A W Russell Assistant Obstetric Physicians Dr Peter McBryde Dr David Shannon, Dr S Cameron and Dr A N McLellan Physician to the West-End Branch Dr James H Martin Visiting Gynæcologists Dr Robert Jardine and Dr S Cameron Assistant Gynæcologists D Donald Duff and Dr James H. Martin. Secretary Mr William Guy 146 Buchanan street Full particulars as to fees and accommodation may be obtained from the House Superintendent at the Hospital

Glasgow Lock Hospital, Rotten row —The Hospital contains 83 beds During 1916 433 patients were admitted to the wards, 261 out door patients were treated at the Dispensary Classes are held for the clinical instruction of medical students and practitioners *Staff* —Surgeon Mr David Watson Assistant Surgeons Dr Elizabeth H Smith and Dr Mabel Jones Pathologist Mr H W Boot.

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The fee to be paid for the degrees of Bachelor of Medicine and Bachelor of Surgery shall be 22 guineas, and the proportion of this sum to be paid by a candidate at each division of the examination shall be regulated from time to time by the University Court The fee to be paid for the degree of Doctor of Medicine shall be 15 guineas and for the degree of Master of Surgery 15 guineas The whole medical curriculum can be taken in University College, Dundee, or the first two years in United College, St Andrews

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For further particulars and details as to scholarships and bursaries application should be made to Professor Kynoch, Dean of the Medical Faculty, University College, Dundee

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UNIVERSITY COLLEGE, Dundee.—This College is one of the constituent colleges of the University of St Andrews. In the medical buildings there are spacious and well-equipped laboratories The complete medical curriculum can be taken in Dundee For classes, fees, &c., see under University of St Andrews

ROYAL INFIRMARY Dundee —The Infirmary contains 408 beds, including special wards for the Diseases of Women, Children, Eye, Ear, and Throat, Skin and for Obstetric cases There is in addition an Extern Obstetric Department. There were during last year 13 660 out-patients and 455 home (maternity) patients The Royal Infirmary offers exceptional facilities for practical work to students Appointments Six qualified Resident Medical Officers (Male or Female) are appointed every six months and one non resident Obstetric Assistant Clinical Clerks and Dressers are attached to the Physicians and Surgeons and students are appointed as assistants in the Pathological Department. There are in connexion with the clinical courses Tutorial Classes in Medicine and Surgery Instruction is also given in Practical Pharmacy and Materia Medica and in Practical Dentistry Further information can be obtained from Dr Fraser, Medical Superintendent

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Staff —Honorary Consulting Surgeons Sir Hector C Cameron and Sir George T Beatson Honorary Consulting Gynæcologist Dr W L Reid Visiting Physicians Dr Ralph Stockman, Dr Wm MacLennan, Dr R Barclay Ness, Dr T K Monro, and Dr J W Nicol (Skin Department) Visiting Surgeons Sir W Macewen Sir Kennedy Dalziel Dr Duncan Macartney, Mr G H Edington, Dr John Morton, and Dr Archibald Young Gynæcologist Dr Murdoch Cameron Assistant Physicians Dr James Carslaw, Dr John S M Kendrick, Dr Frank Charteris, and Dr John Gracie Assistant Surgeons Dr M Logan Taylor, Dr C C Cuthbert, and Dr Alex H Edwards Dispensary Physicians Dr John P Duncan, Dr Geo Allison Allan Dr Jas R C Greenlees, Dr G H Clark and Dr D R Kilpatrick Dispensary Surgeons Dr R B Carslaw, Dr David Dickie, Dr Wm Rankin, Dr J M Renton, Dr Roy Young and Dr W A Campbell Honorary Anæsthetists Dr James P Boyd, Dr R Home Henderson, and Dr H P Fairlie Dispensary Gynæcologists Dr S Cameron and Dr Jas H Martin Extra Dispensary Physicians Dr G B Fleming, Dr Hugh Morton, Dr J W McNee, and D Adam Patrick Dispensary Physician for Diseases of the Skin Dr J G Tomkinson Extra Dispensary Surgeons Dr W A Sewell and Dr Chas Bennett Surgeon for Diseases of the Ear Dr Albert A Gray Surgeon for Diseases of the Throat and Nose Dr Walker Downie Honorary Consulting Physician for Mental Disorders Dr L R Oswald Honorary Consulting Medical Electrician Dr D J Mackintosh Medical Electricians Dr J G Tomkinson, Dr Archd Hay and Dr W F Somerville Pathologist Dr Robert Muir Clinical Pathologist Dr J S Dunn Assistant Pathologists Dr Geo Haswell Wilson and Dr J W McNee Vaccinator Dr J L Carstairs Dental Surgeon Mr W D Woodburn L D S Superintendent Dr D J Mackintosh Matron Miss H Gregory Smith, R R C Secretary and Treasurer J Matheson Johnston C A 87 Union street

ROYAL HOSPITAL FOR SICK CHILDREN, Yorkhill, Glasgow —This institution, which was founded in 1882, consists of (1) a hospital at Yorkhill containing 204 cots built on an elevated and central site close to the University and opened in July, 1914, (2) a Dispensary or Out patient Department in West Graham street, opened in October, 1888, and (3) a country branch at Drumchapel, Dumbartonshire, containing 24 cots, opened in 1903 Children treated must be under 12 years of age and suffering from non infectious diseases In the hospital, part of which is at present used as a military hospital for officers, about 5000 children are treated annually In the Out-patient Department over 12,000 are treated annually involving nearly 50 000 attendances *Hospital and Country Branch* —Honorary Medical Officers —Consulting Physicians Dr George S Middleton Dr R Barclay Ness, and Dr J B Mackenzie Anderson Consulting Surgeons Sir Kennedy Dalziel, Mr R H Parry and Mr James H Nicoll Consulting Pathologist Professor Robert Muir Visiting Physician Dr Leonard Findlay Visiting Surgeons Mr Alfred A. Young and Mr Alexander MacLennan Aurist and Laryngologist Dr J Walker Downie Oculist Dr John Rowan. Dentist Dr Leslie C Broughton Head Pathologist Dr W Blair M Martin *Dispensary* —Honorary Medical Officers —Physicians Dr A Bankier Sloan, Dr James R C Greenlees Dr James Girdwood, Dr Agnes W Cameron Dr W Hendrie Kirk, Dr Geoffrey B Fleming Dr J W McNee Dr Samuel J Moore, Dr Mary T Moore Dr Ethel Crawford and Dr Mabel Jones Surgeons Dr M Logan Taylor Dr William Rankin Dr David Dickie, Dr William A. Campbell, Dr J Mill Renton Dr Charles and Dr William A. Sewell Aurist and Laryngologist Dr James Harper Oculist Dr Walter H Kiep Dentist Dr Leslie C Broughton Head Information with regard to clinical instruction, lectures, demonstrations, &c., may be obtained from the Medical Superintendent

GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL, Rotten row —The new hospital which was opened in 1908 is in point of size the largest of its kind in Britain and has accommodation for 108 patients During the past year a Maternity and Child Welfare Centre has been established in connexion with the hospital consisting of a complete In door and Out door Ante natal Department and an Infant Consultation Clinic In 1916 2264 normal cases and 1308 abnormal cases were treated by the hospital in the In door and Out-door Departments Senior students are allowed to attend the hospital for clinical instruction and practical work on payment of a fee of £5 5*s* A post-graduate course is conducted by the obstetric physicians The proportion of abnormal cases admitted is very large, so there are exceptional opportunities for post-graduate work Fees One month £3 3*s*, six months, £6 6*s*, one year, £10 10*s* Students and graduates are accommodated in the residence in connexion with the hospital

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Candidates must attend for at least three years the medical and surgical practice of a recognised hospital, they must have attended courses of at least nine months in clinical medicine and clinical surgery, and have acted as clerk in the medical and dresser in the surgical wards of a hospital Attendance is required on the practice of a dispensary or the out practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem examinations, and other special subjects The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases

The fee for the degrees of M B and Ch B amounts to £23 2*s*

Besides the Royal Infirmary (270 beds), students have the opportunity of attending the following institutions City Fever Hospital, Sick Children s Hospital, General Dispensary, and Lying in and Vaccine Institutions, Royal Lunatic Asylum, Ophthalmic Institution &c

Degrees of M D and Ch M—Candidates for either of these degrees must already hold the degrees of M B and Ch B of Aberdeen A thesis has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be

A diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination

Application for further information should be addressed to the Secretary of the Medical Faculty

Professors—Physics C Niven D Sc., F R S Physiology J A MacWilliam, M D Medicine Ashley W Mackintosh M D Chemistry Fred Soddy, F R S Anatomy R W Reid, M D, F R C S Surgery John Marnoch M B, C M Materia Medica J T Cash, M D, LL D, F R S Midwifery Robert G McKerron, M D Forensic Medicine Matthew Hay, M D, LL D Botany J W H Trail M D, F R S Pathology Theodore Shennan, M D Natural History J Arthur Thomson, M A, LL D

Scholarships and Prizes—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes —Bursaries about 15 Bursaries (competition and presentation) are open each year, of £15 to £30 per annum in value, most of them being tenable for three years, certain other Bursaries are not confined to the Faculty of Medicine, but may be held by Arts Students Scholarships five Post-Graduate Scholarships value £36 to £160 per annum Prizes and Medals 13 Gold Medals and Prizes for proficiency in special departments, &c

Clinical Instruction is given in the Aberdeen Royal Infirmary (270 beds) by the physicians and surgeon to the staff, many of whom are in the list of professors and other lecturers and demonstrators

Aberdeen Royal Asylum—Contains, with hospital attached to main institution and agricultural branch, about 986 beds Medical Superintendent Dr William Reid. Assistant Physician Dr A W H Cheyne Clerk and Treasurer, Mr A Scott Finnie, 343, Union street, Aberdeen Clinical instruction is given to students during three months in summer

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The London Inter Collegiate Scholarship Board—The awards of certain scholarships in connexion with King's College King's College Medical School, the London (Royal Free Hospital) School of Medicine for Women, University College, and Westminster Hospital Medical Schools were announced in The Lancet of August 18th p 264 The London Inter Collegiate Scholarships Board was constituted in 1904, with the approval of the Governing Bodies of University College, King's College, and the East London College, for the purpose of holding a combined annual examination for entrance scholarships and exhibitions tenable at those colleges and at such other "schools' of the University of London as may agree to make use of the organisation of the Board The examination may also be made use of by other bodies for the award of scholarships and exhibitions, subject to arrangement with the Board Particulars of the examinations held under the auspices of the Board may be obtained from the secretaries or deans of the schools concerned, and copies of papers set at the Board's examinations may be had on application to the Secretary of the Board, King's College, Strand, price 6*d* (or 7*d* post free) each set

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SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

These Colleges have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three Bodies

The three Bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery Copies of the Regulations for the Single Licence of any of the Bodies may be had on application to the respective secretaries

Professional Education—The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction Physics, three months, Elementary Biology, three months, Chemistry six months, Practical or Analytical Chemistry, three months, Anatomy, during at least six months, Practical Anatomy, twelve months, Physiology six months, Practical Physiology, three months, Materia Medica, three months, Pathology (including Practical Pathology), nine months, Practice of Medicine, six months, Clinical Medicine, nine months, Principles and Practice of Surgery, six months, Clinical Surgery, nine months, Midwifery, three months, Gynæcology one course of not less than 13 meetings, Diseases of Children, one course of not less than 13 meetings Medical Jurisprudence and Public Health, three months The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll calls Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and Midwifery and to hold the offices of Clinical Medical Clerk and Surgical Dresser He must also attend for two and a half months instruction in Practical Pharmacy, the certificate to be signed by the teacher, who must be a member of the Pharmaceutical Society of Great Britain, or the superintendent of the laboratory of a public hospital or dispensary, or a registered practitioner who dispenses medicines to his patients, or a teacher of a class of Practical Pharmacy

The student must attend for 27 months the Medical and Surgical practice of a public general hospital containing on an average at least 80 patients available for clinical instruction and possessing distinct staffs of physicians and of surgeons He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case and receive practical instruction in administration of anæsthetics He must attend for six months the practice of a public dispensary especially recognised by any of the above authorities, or the out-patient practice of a recognised general hospital or act for six months as pupil to a registered practitioner who either holds such a public appointment, or has such opportunities of imparting practical knowledge as shall be satisfactory to the coöperating authorities, this attendance should be made after the student has passed the First and Second examinations

Candidates are also required to attend the following courses Diseases and Injuries of the Eye, three months, Insanity, three months, Infectious Diseases three months, Gynæcology, three months, Diseases of Children, three months

The curriculum lasts for five years, the fifth year being devoted to clinical work.

There are four professional examinations —

First Examination includes Physics, Chemistry, and Elementary Biology

Second Examination includes Anatomy and Physiology and Histology, and candidates may be admitted to this examination at the end of the second year of medical study

Third Examination includes Pathology and Materia Medica with Pharmacology

Final Examination—The Final examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects —Medicine, including Thera peutics, Medical Anatomy, and Clinical Medicine, Surgery, including Surgical Anatomy, Clinical Surgery, and Diseases and Injuries of the Eye, Midwifery and Diseases of Women, and, if not passed previously, Medical Jurisprudence and Public Health, but it is optional to candidates who have passed the Third Examination to be admitted to the subject of Medical Jurisprudence and Public Health on lodging certificates of having attended the necessary course in that subject at any time, but the subjects of Medicine, Surgery and Midwifery shall be taken together at any time after the end of the fifth Winter Session, provided that a period of 24 months has elapsed since passing the Second Examination All candidates shall be subjected, in addition to the written and oral examinations, to clinical examinations in Medicine and Surgery, which shall include the Examination of Patients Physical Diagnosis, the Clinical use of the Microscope, Examination of the Urine and Urinary Deposits Surgical Appliances Bandages Surface Markings &c The fees payable for the Final Examination shall be—for the whole examination, £15 for re-entry after rejection, £5 and for the subjects of Medical Jurisprudence and Public Health when taken separately, £5, with £3 for re entry in that subject.

There are six periods of examination annually, four in Edinburgh and two in Glasgow The Registrar in Edinburgh is Mr D L. Eadie, 50, George square and the Registrar in Glasgow Mr Walter Hurst, 242, St Vincent-street, to whom fees and certificates must be sent for the respective examinations and from whom further particulars concerning fees can be obtained

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH
THE MEMBERSHIP AND FELLOWSHIP

In addition to the diplomas granted by the Scottish Conjoint Board the Royal College of Physicians grants its Single Licence to candidates already possessing legal qualifications for professional practice

The Royal College of Physicians of Edinburgh grants a *Membership* and a *Fellowship*

Membership —A candidate who must be a Licentiate of a British or Irish College of Physicians or a graduate in medicine of a University within the British Empire approved by the Council and 24 years of age, is examined in medicine therapeutics and in any branch of the departments of medicine specially professed *such* as general pathology psychology public health, obstetrics gynæcology, diseases of children tropical medicine or medical jurisprudence The fee for the Membership is £36 15s 15 guineas of which will be *returned* to any successful candidate who was already a Licentiate of the College at the time of qualifying for the Membership

Fellowship —The Fellows are selected from the ranks of the *Members* The fee is £64 18s

ROYAL COLLEGE OF SURGEONS OF EDINBURGH
THE FELLOWSHIP

The Royal College of Surgeons of Edinburgh also admits to the examination for its Single Licence any candidates who hold a Diploma in Medicine of any British, Indian or Colonial university or of any British or Colonial College of Physicians or of the Society of Apothecaries of London or Apothecaries Hall, Dublin granted under the provisions of the Medical Act 1886 whose preliminary examination and course of professional study is proved to be sufficient to fulfil the requirements of the College or to those who have passed a full examination for any of the above. Female practitioners are now admitted to the Licence of the College but not to the Fellowship and the regulations for the Licence apply to practitioners of either sex

The Royal College of Surgeons of Edinburgh grants a diploma of Fellowship after examination to the holders of the surgical degrees of diplomas of such British examining bodies as well as of the holders of such surgical degrees of the Universities of Canada Australia, New Zealand and the Indian Empire as are recognised by the College

The Fellowship —Candidates for the examination must be 25 years of age and must have been engaged in practice for at least two years The examination is of a practical nature partly written and partly viva voce and must include surgery and surgical anatomy, operative surgery, and clinical practice One optional subject must also be taken, the range of these specialisms covering nearly every branch of medicine The fee to be paid on entering for examination for Fellowship is £45, £10 of which is remitted to those who already hold the Licentiateship of the College Candidates rejected at the examination obtain repayment of fee less £10 retained for examination expenses One month s notice of intention to present himself for examination must be given by the candidate to Mr D L Eadie, 50, George-square, Edinburgh, clerk to the College, together with credentials signed by two Fellows of the College, one of whom must be a resident in Edinburgh, unless a special application be made to the President and the Council of the College

THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Like the preceding corporations, the Royal Faculty of Physicians and Surgeons of Glasgow grants a Fellowship and a Licence to be held as separate qualifications

Fellowship —The Fellowship of the Faculty is granted after examination in medicine or surgery, together with an optional subject, which may be anatomy or physiology or be selected from any special branch of medicine or surgery, or in one subject to medical practitioners who serve in the present war 14 days' notice must be given by the candidate of his intention to present himself to Mr Walter Hurst, the Faculty Hall, 242 St Vincent-street, Glasgow The fee for the Fellowship is £30, £10 of which sum are returned to any successful candidate who already holds the Licence of the Faculty An additional sum of £20 is required in the case of candidates resident within seven miles of Glasgow In certain circumstances Fellows may be elected as a mark of distinction Special regulations are in force for medical practitioners serving in the present war

Licence —The Licence of the Royal Faculty is granted as a separate qualification to qualified practitioners in Medicine after examination in surgery including surgical anatomy and clinical surgery The fee is 15 guineas

SCOTTISH PROVINCIAL ANCILLARY SCHOOLS AND HOSPITALS

The hospitals which are recognised by the Scottish Conjoint Board, as places where professional study for their diplomas can be pursued are all those institutions which feed the medical faculties of the universities In addition the Scottish Boards recognise all the places which are recognised by the English Conjoint Board (see p 299) and the Irish Conjoint Board (see p 315)

III —IRELAND
THE UNIVERSITIES

UNIVERSITY OF DUBLIN, TRINITY COLLEGE (SCHOOL OF PHYSIC)

Matriculation —All students intending to join the School of Physic must pass a matriculation examination. University students take the Entrance of Trinity College and a Junior Freshman Term or a special Medical Preliminary, Extern Students, any examination recognised by the General Medical Council The winter courses begin on Oct 1st

Degrees in Medicine (*M B*) *Surgery* (*B Ch*), *and Midwifery* (*B A O*).—Candidates for these degrees must be of B A. standing and must be for at least five academic years on the books of the Medical School, reckoned from the date of matriculation. The Arts course may be taken concurrently with the Medical course, and the B A degree need not be taken before the final medical examinations, but the Medical degrees are not conferred without the Arts degree. The following courses must be attended —(1) Lectures—Systematic, Descriptive and Applied Anatomy, Chemistry and Practical Chemistry Surgery and Operative Surgery, Histology Botany Zoology Physics and Practical Physics Physiology and Practical Physiology, Practice of Medicine Midwifery Pathology Materia Medica and Therapeutics Medical Jurisprudence and Hygiene, (2) three courses of nine months attendance on the Clinical Lectures of Sir Patrick Dun s or other

Candidates must attend for at least three years the medical and surgical practice of a recognised hospital, they must have attended courses of at least nine months in clinical medicine and clinical surgery and have acted as clerk in the medical and dresser in the surgical wards of a hospital *Attendance is required on the practice of a dispensary* or the out practice of a hospital and also on courses in Mental Diseases, Fevers, Ophthalmology, Post-mortem examinations, and other special subjects The candidate is also required to have been properly instructed in Vaccination and to have attended at least 20 Midwifery cases

The fee for the degrees of M B and Ch B amounts to £23 2s

Besides the Royal Infirmary (270 beds) students have the opportunity of attending the following institutions City Fever Hospital, Sick Children s Hospital, General Dispensary and Lying in and Vaccine Institutions, Royal Lunatic Asylum, Ophthalmic Institution &c

Degrees of M D and Ch M—Candidates for either of these degrees must already hold the degrees of M B and Ch B of Aberdeen A thesis has to be presented and an examination has to be passed in Clinical Medicine (or in some special Department of Medical Science) or Clinical Surgery, as the case may be

A diploma in Public Health is granted by the University to graduates in Medicine of a University in the United Kingdom, after a special examination

Application for further information should be addressed to the Secretary of the Medical Faculty

Professors—*Physics* C Niven D Sc, F R S *Physiology* J A. MacWilliam, M D *Medicine* Ashley W Mackintosh M D *Chemistry* Fred Soddy, F R S *Anatomy* R W Reid, M D, F R C S *Surgery* John Marnoch M B, C M *Materia Medica* J T Cash, M D, LL D, F R.S *Midwifery* Robert G McKerron, M D *Forensic Medicine* Matthew Hay, M D, LL D *Botany* J W H Trail, M D, F R S *Pathology* Theodore Shennan, M D *Natural History* J Arthur Thomson, M A., LL D

Scholarships and Prizes—In the Faculty of Medicine of the University of Aberdeen there are the following Bursaries, Scholarships, and Prizes —Bursaries about 15 Bursaries (competition and presentation) are open each year, of £15 to £30 per annum in value, most of them being tenable for three years, certain other Bursaries are not confined to the Faculty of Medicine, but may be held by Arts Students Scholarships five Post-Graduate Scholarships value £36 to £160 per annum Prizes and Medals 13 Gold Medals and Prizes for proficiency in special *departments*, &c

Clinical Instruction is given in the Aberdeen Royal Infirmary (270 beds) by the physicians and surgeon to the staff, many of whom are in the list of professors and other lecturers and demonstrators

ABERDEEN ROYAL ASYLUM—Contains, with hospital attached to main institution and agricultural branch, about 986 beds Medical Superintendent Dr William Reid Assistant Physician Dr A W H Cheyne Clerk and Treasurer, Mr A Scott Finnie, 343, Union street, Aberdeen Clinical instruction is given to students during three months in summer

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THE LONDON INTER COLLEGIATE SCHOLARSHIP BOARD—*The awards of certain scholarships* in connexion with King's College King's College Medical School, the London (Royal Free Hospital) School of Medicine for Women, University College, and Westminster *Hospital Medical* Schools were announced in THE LANCET of August 18th p 264 The London Inter Collegiate Scholarships Board was constituted in 1904 with the approval of the Governing Bodies of University College, King's College, and the East *London College, for the purpose of* holding a combined annual examination for entrance scholarships and exhibitions tenable at those colleges and at such other "schools of the University of London as may agree to make use of the organisation of the Board The examination may also be made use of by other bodies for the award of scholarships and exhibitions, subject to arrangement with the Board Particulars of the examinations held under the auspices of the Board may *be obtained from the secretaries* or deans of the schools concerned, and copies of papers set at the Board's examinations may be had on application to the Secretary of the Board, King's College Strand, price *6d* (or *7d* post-free) each set

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SCOTTISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH ROYAL COLLEGE OF SURGEONS OF EDINBURGH, ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

These Colleges have made arrangements by which, after one series of examinations, held in Edinburgh or Glasgow, or both, the student may obtain the diplomas of the three Bodies

The three Bodies grant their Single Licences only to candidates who already possess legal qualifications in Medicine or Surgery *Copies of the Regulations for the Single* Licence of any of the Bodies may be had on application to the respective secretaries

Professional Education—The candidate must produce certificates or other satisfactory evidence of having attended the following separate and distinct courses of instruction Physics, three months, Elementary Biology three months, Chemistry, six months, Practical or Analytical Chemistry three months, Anatomy, during at least six months, Practical Anatomy, twelve months, Physiology six months, Practical Physiology three months, Materia Medica, three months, Pathology (including Practical Pathology), nine months, Practice of Medicine six months, Clinical Medicine, nine months, Principles and Practice of Surgery, six months, Clinical Surgery, nine months, Midwifery, three months, Gynæcology one course of not less than 13 meetings, *Diseases of Children*, one course of *not less than 13 meetings* Medical Jurisprudence and Public Health, three months The certified attendance on lectures, demonstrations, and practical work must not be less than three-fourths of the total number of roll calls Every student undergoes a course of Practical Midwifery, but before attending at labours he is required to attend a course of lectures on Surgery and *Midwifery* and *to hold* the offices of Clinical Medical Clerk and Surgical Dresser He must also attend for two and a half months instruction in *Practical* Pharmacy, the certificate to be signed by the teacher, who must be a member of the Pharmaceutical Society of Great Britain, or the superintendent of the laboratory of a public hospital or dispensary, or a registered practitioner who dispenses medicines to his patients, or a teacher of a class of Practical Pharmacy

The student must attend for 27 months the Medical and Surgical practice of a public general *hospital* containing on an average at least 80 patients available for *clinical instruction* and *possessing* distinct staffs of physicians and of surgeons He must act as Surgical Dresser and Medical Clinical Clerk for not less than six months in the wards in each case, and receive practical instruction in administration of anæsthetics He must attend for six months the practice of a public dispensary *especially* recognised by any of the above authorities, or the outpatient practice *of a recognised general* hospital or act for six months as pupil to a registered practitioner who either holds such a public appointment, or has such opportunities of imparting practical knowledge as shall be satisfactory to the coöperating authorities, this attendance should be made after the student has passed the First and Second examinations

Candidates are also required *to attend* the following courses Diseases and Injuries of the Eye, three months, Insanity, three months, Infectious Diseases three months, Gynæcology, three months, Diseases of Children, three months

The *curriculum lasts for five years*, the fifth year being devoted to clinical work

There are four professional examinations —

First Examination includes Physics, Chemistry, and Elementary Biology

Second Examination includes Anatomy and Physiology and Histology, and candidates may be admitted to this examination at the end of the second year of medical study

Third Examination includes Pathology and Materia Medica with Pharmacology

Final Examination—The Final examination shall not be taken earlier than the end of the fifth year of study and shall embrace the following subjects —Medicine, including Thera mental Physics (with Laboratory Course) Summer Zoology, Practical Zoology Botany, and Practical Botany Second year —Winter Anatomy, Practical Anatomy Physiology, and Practical Physiology (physical and chemical) Summer Anatomy, Practical Anatomy, Physiology and Practical Histology Third year —Winter Pathology, Surgery or Medicine, Hygiene, Medical Jurisprudence, and Practical Pharmacy Summer Materia Medica and Therapeutics, and Practical Pathology Candidates are also required to attend a General Hospital for nine months (winter and summer) Fourth year or fourth and fifth years —Winter Medicine or Surgery (the subject to be that not taken in the third year), and Midwifery and Gynæcology Summer Operative Surgery Applied Anatomy and Ophthalmology and Otology Candidates are also required to attend a General Hospital for nine months (winter and summer) and to take instruction in Vaccination, and three months Fever Hospital Fifth year —If the Academic (Collegiate) Courses are taken as above, the Courses of the fifth year will be the following Hospital Attendance, General Hospital, nine months, Clinical Ophthalmology and Otology, three months, Practical Midwifery and Gynæcology, six months, Mental Diseases to be attended at a Lunatic Asylum, three months (Note —Practical Midwifery and Gynæcology may be taken in the fourth year after the Systematic Course of Midwifery but it must not be taken concurrently with the period of attendance at Fever Hospital) The degree of M D may be obtained either by examination or on published work.

Dean of the Faculty (of the College) Professor McLoughlin

Professors —Anatomy Edward Patrick McLoughlin M B Physiology Bertram James Collingwood, M D Zoology George Sigerson M D Chemistry Hugh Ryan, D Sc. Physics John A McClelland, D Sc F R S Pathology and Bacteriology Edmund J McWeeney M D, D P H Medicine Joseph F O Carroll, M D Surgery John S McArdle, M Ch F R C S Irel Midwifery and Gynæcology Alfred J Smith M B F R.C S Irel. Materia Medica and Therapeutics Martin Dempsey, M D Hygiene and Medical Jurisprudence J N Meenan, M B, D P H. Botany J Bayley Butler M B and Louis Werner M B F R.C S Irel Dental Surgery E Sheridan F R C S Irel, L.D S Dental Mechanics J L Potter L.D S

Assistant and Demonstrators —Anatomy Dr H Barniville Dr C J MacAuley Mr H S Meade F R C S I and Dr W Doolin Chemistry Mr G Ebrill B A, and Mr T Dillon D Sc Pathology and Bacteriology Dr T T O Farrell and Dr W D O Kelly Pharmacy Dr M Hayes Physics Mr J Nolan M Sc and Mr John J Dowling M A Surgery Dr A Blayney Physiology Dr James M O Connor

Fees —The fees for Courses are similar to those of the other Dublin Medical Schools

Information concerning these and the numerous scholarships and exhibitions of the College can be obtained from the Dean

UNIVERSITY COLLEGE CORK THE SCHOOL OF MEDICINE —The building is provided with a very large well ventilated dissecting room supplied with electric light, with physiological, toxicological, pathological, and pharmaceutical laboratories materia medica anatomical and pathological museums as well as a collection of surgical and obstetrical instruments and appliances There are well appointed physical chemical and biological laboratories and a large natural history museum in the adjoining building, and part of the College ground is laid out as a botanical garden The plant houses are well filled with plants and are open to the students in the class of Botany The Library contains over 50 000 volumes and is open daily during term time to students The Medical Museum occupies a large room erected at the northern end of the medical buildings There are Student Clubs for men and women students of the College and various athletic clubs the [illegible] of these holding a public meeting once in each year in the Mardyke grounds.

Dean of the Faculty —Professor A E Moore M B

Professors —Anatomy D P Fitzgerald M B B Ch Botany H A Cummins M D Chemistry A E Dixon M D Experimental Physics W Bergin M A Materia Medica John Dundon M B F R C S Eng & Irel Medicine W Ashley Cummins M D Obstetrics and Gynæcology H Corby M D M Ch Pathology A F Moore M B B Ch Physiology D T Barry M D F R C S Eng Surgery C Yelverton Pearson, M D, F R.C S Eng Zoology Marcus Hartog, D Sc F L S Hygiene Dr D D Donovan Medical Jurisprudence Dr P T O Sullivan Ophthalmology Dr A. W Sandford

Lecturers —Mental Diseases Dr J J Fitzgerald. Chemistry Mr J Taylor, M Sc Pathology Dr W. Magner D P H

Demonstrators —Anatomy Dr W F O'Connor Chemistry Mr H R. S Clotsworthy, B Sc Experimental Physics Mr P Belas B A Pathology Dr W Magner Physiology Dr J M O Donovan B Sc Surgery Dr C B Pearson. Zoology Miss B E Duke, B Sc

All students who have been admitted as matriculated students are required to attend before the President and sign the Roll of Matriculated Students Students who may be candidates for degrees in the National University of Ireland must have passed the Matriculation Examination of that University or other recognised examination, and medical students must have passed a preliminary examination recognised by the General Medical Council Candidates will be examined in Irish Greek, or French or German, Latin, History Geography English, and Mathematics.

Admission of Medical Students —Students in the Faculty of Medicine who have passed the First Professional Examination of the Conjoint Examinations of the Royal College of Physicians and the Royal College of Surgeons in Ireland, or of the Royal College of Physicians and Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow or of the Royal College of Physicians, London, and Royal College of Surgeons, England, may be admitted to the rank of second year students on making application to the Council and submitting a certificate of having passed the examination. Similarly students who have passed the Second Professional Examination of the same Colleges may be admitted to the rank of third year students, and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties, may be admitted to the rank of fourth year students

Residence of Students —There is no accommodation for the residence of students within the College, but students not living at home or with relatives or friends sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, a list of which can be obtained from the Secretary All students are required to register their addresses each session in the book kept for that purpose in the hall porter s office, and to notify immediately to the Registrar any change of address during the session The Honan Hostel adjoining the College, is equipped by private endowment A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden The Ursuline Convent, Blackrock, has a house of residence, quite separate from their Secondary School for Catholic women students

Clinical Instruction —Students may attend the South Infirmary, Cork North Charitable Infirmary, the Mercy Hospital, the Cork District Lunatic Asylum, the Victoria Hospital for Diseases of Women and Children the County Lying in Hospital the Cork Maternity the Cork Fever Hospital the Cork District Hospital and the Cork Ear, Eye, and Throat Hospital

Complete information with regard to class fees, scholarships and prizes can be obtained from the Dean of the College

South Infirmary and County of Cork General Hospital (100 beds) —Staff Consulting Physician Dr P J Cremen. Physicians Dr P T O Sullivan and Dr Norman I Townsend. Surgeons Dr H R Townsend Dr T Gelston Atkins and Dr Henry Corby Ophthalmic Surgeon Dr A W Sandford Physicians for Extern Patients Dr E W Allsom and Dr E. V Cantillon Surgeon for Extern Patients Dr R. P Crosbie Anæsthetist Dr M V Shanahan Radiologist Dr G Hegarty Pathologist Dr A E. Moore. House Surgeon Dr W P Lehane House Physician Dr J C Saunders Dentist Mr T C Butterfield. Honorary Secretary Dr N I Townsend Clinical instruction is given daily in the wards Special instruction on Ophthalmic Surgery and Diseases of Women and Children will be given in the special wards for such cases Fee for perpetual ticket £22 1s, for nine months £9 9s, for six months £6 6s, for three months £3 3s Two resident pupils recognised Hospital , (3) Practical Vaccination, one month's instruction , (4) Mental Disease, three months , (5) Practical Midwifery with Clinical Lectures, including not less than 30 cases, six months , (6) Ophthalmic Surgery, three months Three groups of examinations have to be passed Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology The Intermediate Medical Part I , including Anatomy and Physiology The Intermediate Medical, Part II , including Applied Anatomy and Applied Physiology , and the Final Examination, which is divided into Part I , Materia Medica, Hygiene and Jurisprudence, and Pathology , and Part II , Medicine, including Clinical Surgery, Midwifery, Gynæcology, Mental Diseases Operations, and Clinical Ophthalmology Part I may be passed in the fourth year and Part II completed at the end of the fifth year

Doctor in Medicine —A Doctor in Medicine must have passed all the qualifying examinations and must be a B A of three years' standing He must also read a thesis before the Regius Professor of Physic

Master in Surgery —A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession He must then pass a special examination

Master in Obstetric Science —A Master in Obstetric Science must be a Bachelor of three years standing and produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years He is then required to pass a special examination

University Diplomas —Candidates for the diplomas in Medicine, Surgery, or Obstetric Science must be matriculated in Medicine and must have completed two years in Arts and five years in Medical Studies The Course and Examination necessary for the diplomas are the same as for the degrees A diploma in Medicine, Surgery, and Midwifery is a registrable qualification conferred upon candidates who have completed a full five years' course in Medicine and two years in Arts A diplomate, on completing his course in Arts and proceeding to the degree of B A., may become a Bachelor by paying the degree fees

Bachelor in Dental Science and Master in Dental Science —The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic

Professors and Lecturers —Regius Professor of Physic John Mallet Purser, M D Regius Professor of Surgery Edward H Taylor, M D University Professor of Anatomy and Chirurgery Andrew Francis Dixon M B , Sc D University Professor of Chemistry Sydney Young, Sc D , F R S University Professor of Botany Henry H Dixon, Sc D , F R S Erasmus Smith s Professor of Natural Philosophy William E Thrift, M A Professor of Surgery Thomas E Gordon, M B Professor of Zoology and Comparative Anatomy H W Mackintosh M A. King s Professor of Practice of Medicine James Craig, M D King s Professor of Materia Medica and Pharmacy Walter G Smith, M D King s Professor of Institutes of Medicine W H Thompson, M D , Sc D King s Professor of Midwifery T Henry Wilson F R C P I Honorary Professor of Laryngology and Otology Sir Robert H Woods M D , M Ch Honorary Professor of Dermatology Wallace Beatty, M D Lecturer in Medical Jurisprudence and Hygiene Henry T Bewley M D Lecturer in Pathology Alexander C O Sullivan M D Lecturer in Dental Surgery and Pathology A W W Baker M D , M Dent Sc Lecturer in Dental Mechanics Joseph Cockburn L D S Lecturer in Orthodontia E Sheldon Friel M Dent Sc Lecturer in Anæsthetics T Percy C Kirkpatrick M D

All Degrees and Courses of Instruction are open to women students

Clinical instruction —The hospital facilities for clinical instruction available in Dublin will be described below

THE NATIONAL UNIVERSITY OF IRELAND

Matriculation —All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres All students must pass in five subjects All students must pass in the following subjects[1] except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation , but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University —1 Irish 2 Latin or Greek. 3 French, German, Italian, Spanish, Portuguese Russian, Welsh, Dutch or any other language approved by the Senate 4 English 5 Mathematics 6 Latin, Greek, French, German, Welsh, Spanish, Italian, Portuguese, Russian, or any other modern language approved by the Senate History and Geography (*as a composite subject*), History, Geography, Natural Philosophy, or Physics as an alternative, Chemistry, Botany, and for women candidates only, Physiology, and Hygiene Candidates who under the regulations are exempted from the necessity of presenting Irish as one of their subjects may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty of the University

The medical degrees granted are —

M B , B Ch , and B A O , and M D , M Ch , and M A O — Printed forms of application for admission to any medical examination may be had from "The Registrar, The National University of Ireland, *Dublin* "

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin , University College, Cork , and University College, Galway

UNIVERSITY COLLEGE, DUBLIN —The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908 Former students of the Cecilia street School of Medicine who graduated in the Royal University may become graduate members of the new College The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and coöpted lecturers, a body of graduate members, and a body of student members matriculated in the University The first professors and lecturers were appointed by the Dublin Commissioners Irish Universities Act, 1908

Matriculation —Almost all the students of the College are matriculated students of the National University of Ireland

University Examinations in Medicine —The First Examination includes Physics, Chemistry Botany, and Zoology The examination may be taken in two parts Part I, Physics and Chemistry , Part II , Botany and Zoology Honours may be obtained only when both parts are taken as one examination The Second Examination includes Anatomy and Physiology Both must be passed at the same time The Third Examination includes Pathology, Medical Jurisprudence and Hygiene and Materia Medica

Degrees of M B , B Ch , and B A O —The Examination in Medicine, Midwifery Surgery, and Ophthalmology includes both the theoretical and the clinical branches No student can enter for the M B B Ch , or B A O until the end of the fifth year when the curriculum has been completed The course of study is as follows —First year —Winter Anatomy and Practical Anatomy (required for the Second Examination),[2] Chemistry, Practical Chemistry, and Experi mental Physics (with Laboratory Course) Summer Zoology, Practical Zoology, Botany, and Practical Botany Second year—Winter Anatomy Practical Anatomy Physiology, and Practical Physiology (physical and chemical) Summer Anatomy, Practical Anatomy Physiology and Practical Histology Third year—Winter Pathology, Surgery or Medicine, Hygiene Medical Jurisprudence, and Practical Pharmacy Summer Materia Medica and Therapeutics, and Practical Pathology Candidates are also required to attend a General Hospital for nine months (winter and summer) Fourth year or fourth and fifth years.—Winter Medicine or Surgery (the subject to be that not taken in the third year), and Midwifery and Gynæcology Summer Operative Surgery Applied Anatomy, and Ophthalmology and Otology Candidates are also required to attend a General Hospital for nine months (winter and summer) and to take instruction in Vaccination, and three months Fever Hospital Fifth year—If the Academic (Collegiate) Courses are taken as above the Courses of the fifth year will be the following Hospital Attendance General Hospital, nine months, Clinical Ophthalmology and Otology, three months, Practical Midwifery and Gynæcology six months, Mental Diseases to be attended at a Lunatic Asylum, three months (Note—Practical Midwifery and Gynæcology may be taken in the fourth year after the Systematic Course of Midwifery, but it must not be taken concurrently with the period of attendance at Fever Hospital) The degree of M D may be obtained either by examination or on published work.

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[1] The Senate has directed that candidates who presented themselves for the Matriculation Examination and who passed in certain subjects in 1912 or any previous year may when presenting themselves in 1918, in the remaining subjects necessary to complete the examination select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1912. Such candidates will not be obliged to present themselves for examination in Irish. Such candidates however while they may select the completing subjects as above must present themselves for examination in these subjects on the courses prescribed in each by the Regulations in 1918 Candidates who presented themselves for the Matriculation Examination and who passed in certain subjects in 1913 when presenting themselves in 1918 in the remaining subjects necessary to complete the examination must select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1913 The courses in such completing subjects will be the courses prescribed in those subjects respectively for 1918

[2] These courses are not required for the First Examination in Medicine but must be taken in the first year to permit a candidate to qualify for admission to the Second Examination in Medicine at the end of the second year

Dean of the Faculty (of the College) Professor McLoughlin

Professors—Anatomy Edward Patrick McLoughlin M B Physiology Bertram James Collingwood, M D Zoology George Sigerson M D Chemistry Hugh Ryan, D Sc. Physics John A McClelland D Sc, F R S Pathology and Bacteriology Edmund J McWeeney M D, D P H Medicine Joseph F O Carroll M D Surgery John S McArdle M Ch F R C S Irel Midwifery and Gynæcology Alfred J Smith, M B F R.C S Irel Materia Medica and Therapeutics Martin Dempsey, M D Hygiene and Medical Jurisprudence J N Meenan, M B, D P H Botany J Bayley Butler M B and Louis Werner, M B F R C S Irel Dental Surgery E Sheridan F R C S Irel, L D S Dental Mechanics J L Potter L.D S

Assistants and Demonstrators—Anatomy Dr H Barniville, Dr C J MacAuley Mr H S Meade F R C S I and Dr W Doolin Chemistry Mr G Ebrill B A and Mr T Dillon D Sc Pathology and Bacteriology Dr T T O Farrell and Dr W D O Kelly Pharmacy Dr M Hayes Physics Mr J Nolan M Sc and Mr John J Dowling M A Surgery Dr A Blayney Physiology Dr James M O Connor

Fees—The fees for Courses are similar to those of the other Dublin Medical Schools

Information concerning these and the numerous scholarships and exhibitions of the College can be obtained from the Dean

UNIVERSITY COLLEGE CORK THE SCHOOL OF MEDICINE—The building is provided with a very large, well ventilated dissecting room supplied with electric light with physiological, toxicological, pathological and pharmaceutical laboratories [illegible] medical anatomical and pathological museums as well as a collection of surgical and obstetrical instruments and appliances There are well appointed physical, chemical and biological laboratories and a large natural history [illegible] in the adjoining building and part of the College grounds is laid out as a botanical garden The [illegible] are well stocked with plants and are open to the students in the class of Botany The Library contains over 5[illegible] and is open daily during term time to students The [illegible] occupies a large room [illegible] buildings There [illegible] and women students of the [illegible] of the building a [illegible] Midwifery [illegible] Moore [illegible] B [illegible] C [illegible] M D [illegible] M B B Ch [illegible] Dixon [illegible] M A [illegible] C [illegible] Irel [illegible] and Gynæcology H [illegible] M B B Ch [illegible] F R C [illegible] F R C

Yelverton Pearson, M D, F R.C S Eng Zoology Marcus Hartog, D Sc F L.S Hygiene Dr D D Donovan Medical Jurisprudence Dr P T O Sullivan Ophthalmology Dr A W Sandford

Lecturers—Mental Diseases Dr J J Fitzgerald. Chemistry Mr J Taylor, M Sc Pathology Dr W. Magner D P H

Demonstrators—Anatomy Dr W F O'Connor Chemistry Mr H R S Clotsworthy, B Sc Experimental Physics Mr P Belas B A Pathology Dr W Magner Physiology Dr J M O Donovan B Sc Surgery Dr C B Pearson. Zoology Miss B E Duke B Sc

All students who have been admitted as matriculated students are required to attend before the President and sign the Roll of Matriculated Students Students who may be candidates for degrees in the National University of Ireland must have passed the Matriculation Examination of that University or other recognised examination, and medical students must have passed a preliminary examination recognised by the General Medical Council Candidates will be examined in Irish Greek, or French or German, Latin, History, Geography, English and Mathematics.

Admission of Medical Students—Students in the Faculty of Medicine who have passed the First Professional Examination of the Conjoint Examinations of the Royal College of Physicians and the Royal College of Surgeons in Ireland or of the Royal College of Physicians and Royal College of Surgeons of Edinburgh and the Faculty of Physicians and Surgeons of Glasgow, or of the Royal College of Physicians London, and Royal College of Surgeons, England may be admitted to the rank of second year students on making application to the Council and submitting a certificate of having passed the examination. Similarly students who have passed the Second Professional Examination of the same Colleges may be admitted to the rank of third year students, and those who have passed the Third Professional Examination of the Dublin Colleges, or of the Edinburgh Colleges and Glasgow Faculties may be admitted to the rank of fourth year students

Residence of Students—There is no accommodation for the residence of students within the College, but students not living at home or with relatives or friends, sanctioned by their parents or guardians, are required to live in a hostel or in recognised lodgings, a list of which can be obtained from the Secretary All students are required to register their addresses each session in the book kept for that purpose in the hall porter's office, and to notify immediately to the Registrar any change of address during the session The Honan Hostel adjoining the College, is equipped by private endowment A number of sets of rooms, together with recreation and common rooms, are provided for lay students who may desire to live there. For full particulars apply to the Warden The Ursuline Convent, Blackrock has a house of residence, quite separate from their Secondary School for Catholic women students

Clinical Instruction—Students may attend the South Infirmary, Cork North Charitable Infirmary, the Mercy Hospital the Cork District Lunatic Asylum the Victoria Hospital for Diseases of Women and Children, the County Lying in Hospital, the Cork Maternity the Cork Fever Hospital the Cork District Hospital, and the Cork Ear, Eye and Throat Hospital

Complete information with regard to class fees, scholarships and prizes can be obtained from the Dean of the College

South Infirmary and County of Cork General Hospital (100 beds)—Staff Consulting Physician Dr P J Cremen Physician Dr P T O Sullivan and Dr Norman I Townsend Surgeons Dr H R Townsend Dr T Gelston Atkins and Dr Henry Corby Ophthalmic Surgeon Dr A W Sandford Physician for Extern Patients Dr F W Allsom and Dr E. N Cantillon Surgeon for Extern Patients Dr R P Crosbie [illegible] Dr M N Shanahan Radiologist Dr G H[illegible] Pathologist Dr [illegible] E Moore House Surgeon Dr W P [illegible] House Physician Dr [illegible] Saunders Dentist Mr T C Butterfield Honorary Secretary Dr N I Townsend Clinical instruction is given daily in the wards Special instruction on Ophthalmic Surgery and Diseases of Women and Children will be given in the several departments [illegible] £22 1s [illegible] £9 9s [illegible] £3 3s Two [illegible] recognised Hospital, (3) Practical Vaccination, one month's instruction, (4) Mental Disease, three months, (5) Practical Midwifery with Clinical Lectures, including not less than 30 cases, six months, (6) Ophthalmic Surgery, three months Three groups of examinations have to be passed Preliminary Scientific Examination, including Physics and Chemistry, Botany, and Zoology The Intermediate Medical Part I, including Anatomy and Physiology The Intermediate Medical, Part II, including Applied Anatomy and Applied Physiology, and the Final Examination, which is divided into Part I, Materia Medica Hygiene and Jurisprudence, and Pathology, and Part II, Medicine, including Clinical, Surgery, Midwifery Gynæcology, Mental Diseases Operations, and Clinical Ophthalmology Part I may be passed in the fourth year and Part II completed at the end of the fifth year

Doctor in Medicine —A Doctor in Medicine must have passed all the qualifying examinations and must be a B A. of three years' standing He must also read a thesis before the Regius Professor of Physic

Master in Surgery —A Master in Surgery must be a Bachelor in Surgery of the University of Dublin of not less than three years' standing, and must produce satisfactory evidence of having been engaged for not less than two years from the date of his registration in the study, or study and practice, of his profession He must then pass a special examination

Master in Obstetric Science —A Master in Obstetric Science must be a Bachelor of three years standing and produce evidence of having been engaged in the study of Obstetric Medicine and Surgery during two years He is then required to pass a special examination

University Diplomas —Candidates for the diplomas in Medicine, Surgery, or Obstetric Science must be matriculated in Medicine and must have completed two years in Arts and five years in Medical Studies The Course and Examination necessary for the diplomas are the same as for the degrees A diploma in Medicine, Surgery, and Midwifery is a registrable qualification conferred upon candidates who have completed a full five years' course in Medicine and two years in Arts. A diplomate, on completing his course in Arts and proceeding to the degree of B A, may become a Bachelor by paying the degree fees

Bachelor in Dental Science and Master in Dental Science —The regulations under which these degrees are awarded can be obtained by application to the Registrar of the School of Physic

Professors and Lecturers —Regius Professor of Physic John Mallet Purser, M D Regius Professor of Surgery Edward H Taylor, M D University Professor of Anatomy and Chirurgery Andrew Francis Dixon, M B Sc D University Professor of Chemistry Sydney Young, Sc D F R S University Professor of Botany Henry H Dixon, Sc D, F R S Erasmus Smith's Professor of Natural Philosophy William E Thrift, M A Professor of Surgery Thomas E Gordon, M B Professor of Zoology and Comparative Anatomy H W Mackintosh M A King's Professor of Practice of Medicine James Craig, M D King's Professor of Materia Medica and Pharmacy Walter G Smith M D King's Professor of Institutes of Medicine W H Thompson M D, Sc.D King's Professor of Midwifery T Henry Wilson F R C P I Honorary Professor of Laryngology and Otology Sir Robert H Woods M D, M Ch. Honorary Professor of Dermatology Wallace Beatty M D Lecturer in Medical Jurisprudence and Hygiene Henry T Bewley M D Lecturer in Pathology Alexander C O Sullivan, M D Lecturer in Dental Surgery and Pathology A. W W Baker M D M Dent Sc Lecturer in Dental Mechanics Joseph Cockburn L D S Lecturer in Orthodontia E Sheldon Friel M Dent Sc Lecturer in Anæsthetics T Percy C Kirkpatrick M D

All Degrees and Courses of Instruction are open to women students

Clinical instruction —The hospital facilities for clinical instruction available in Dublin will be described below

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THE NATIONAL UNIVERSITY OF IRELAND

Matriculation.—All students intending to proceed to the medical degree of the University of Ireland must pass a matriculation examination, the examination taking place in June and September in Dublin and at certain local centres All students must pass in five subjects All students must pass in the following subjects[1] except students not born in Ireland, and other students whose home residence shall have been outside Ireland during the three years immediately preceding their matriculation, but all such students will be expected to attend a course of instruction in Irish Literature and History prior to obtaining any degree in the University —1 Irish 2 Latin or Greek. 3 French German, Italian, Spanish, Portuguese Russian, Welsh, Dutch or any other language approved by the Senate. 4 English 5 Mathematics 6 Latin, Greek, French, German, Welsh, Spanish, Italian, Portuguese, Russian, or any other modern language approved by the Senate, History and Geography (*as a composite subject*), History Geography, Natural Philosophy, or Physics as an alternative, Chemistry, Botany, and for *women candidates only*, Physiology, and Hygiene Candidates who under the regulations are exempted from the necessity of presenting Irish as one of their subjects may present as their fifth subject either a second language or a second science subject. Students entering for degrees in Medicine or Dentistry, if already registered by the General Medical Council, may be accepted as matriculated students of the Faculty of Medicine on passing the matriculation examination in any faculty of the University

The medical degrees granted are —

M B, B Ch, and B A O, and M D, M Ch, and M A O—Printed forms of application for admission to any medical examination may be had from "The Registrar, The National University of Ireland, Dublin"

The Constituent Colleges of the National University of Ireland at which the full curriculum for medical degrees can be obtained are University College, Dublin, University College, Cork, and University College, Galway

UNIVERSITY COLLEGE, DUBLIN —The University and the College were created by the Irish University Act, 1908, and by Charters issued in December, 1908 Former students of the Cecilia street School of Medicine who graduated in the Royal University may become graduate members of the new College The constitution of the College, like that of the Constituent Colleges of Cork and Galway, provides for a governing body, an academic council consisting of professors and coöpted lecturers, a body of graduate members, and a body of student members matriculated in the University The first professors and lecturers were appointed by the Dublin Commissioners Irish Universities Act, 1908

Matriculation —Almost all the students of the College are matriculated students of the National University of Ireland

University Examinations in Medicine —The First Examination includes Physics, Chemistry Botany and Zoology The examination may be taken in two parts Part I, Physics and Chemistry, Part II, Botany and Zoology Honours may be obtained only when both parts are taken as one examination The Second Examination includes Anatomy and Physiology Both must be passed at the same time The Third Examination includes Pathology, Medical Jurisprudence and Hygiene and Materia Medica

Degrees of M B, B Ch, and B A O —The Examination in Medicine, Midwifery Surgery, and Ophthalmology includes both the theoretical and the clinical branches No student can enter for the M B, B Ch, or B A O until the end of the fifth year when the curriculum has been completed The course of study is as follows —First year —Winter Anatomy and Practical Anatomy (required for the Second Examination),[2] Chemistry, Practical Chemistry and Experi

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[1] The Senate has directed that candidates who presented themselves for the Matriculation Examination and who passed in certain subjects in 19 2 or any previous year may when presenting themselves in 1916. in the remaining subjects necessary to complete the examination select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1912. Such candidates will not be obliged to present themselves for examination in Irish Such candidates however while they may select the completing subjects as above must present themselves for examination in these subjects on the courses prescribed in each by the Regulations in 1918 Candidates who presented themselves for the Matriculation Examination and who passed in certain subjects in 1913 when presenting themselves in 1918 in the remaining subjects necessary to complete the examination must select such completing subjects in accordance with the regulations as to groups of subjects which were in force in 1913 The courses in such completing subjects will be the courses prescribed in those subjects respectively for 1918

[2] These courses are not required for the First Examination in Medicine but must be taken in the first year to permit a candidate to qualify for admission to the Second Examination in Medicine at the end of the second year

QUEEN'S UNIVERSITY OF BELFAST

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M.B.), Bachelor of Surgery (B.Ch.), Bachelor of Obstetrics (B.A.O.), Doctor of Medicine (M.D.), Master of Surgery (M.Ch.), and Master of Obstetrics (M.A.O.). The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar. The degrees of M.B., B.Ch., and B.A.O. are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study. No student is admitted to the final examination for these degrees until he has shown (1) that he is a matriculated student of the University, (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine by the General Council of Medical Education and Registration of the United Kingdom, (3) that he has passed the several examinations prescribed, (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate), and (5) that he has attained the age of 21 years. Every candidate for admission as a matriculated student of the University shall pass such Matriculation Examination or fulfil such other test of fitness as may be prescribed by the Senate, which may prescribe the conditions under which students who have passed the Matriculation or Entrance Examination of any other University or College approved for that purpose (or who have fulfilled such other test of fitness as may be prescribed) may be exempted from passing the Matriculation Examination of the University. For information as to Scholarships and Prizes inquiry should be made of the Secretary of the University.

Primary Degrees of M.B., B.Ch., B.A.O.—All candidates for these degrees must satisfy the examiners in the subjects of four examinations known as the First, Second, Third, and Fourth Medical Examinations respectively.

The First Medical Examination.—The subjects of this examination are Chemistry (Inorganic and Organic), Experimental and Practical Physics, Botany and Zoology, and Practical Botany and Zoology. The examination will be divided into two parts which may be taken separately: I., Chemistry, Practical Chemistry, and Experimental Physics (including laboratory work); II., Botany and Zoology (including laboratory work).

The Second Medical

previously passed in all the subjects of the Second Medical Examination.

Degrees of M.D., M.Ch., and M.A.O.—These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed. These degrees may be conferred by the Senate either (*a*) after an examination which includes written, oral, clinical, and practical examinations, or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

The Medical School.—The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class-room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances. The Anatomical Department contains a large and well lighted dissecting room, a lecture-room, a professor's and demonstrator's room, a bone-room, and a laboratory for microscopic and photographic work. The Medical Museum is in the same building. The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology, and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms. The Musgrave Pathological Laboratory.—In this department opportunity is afforded for research in pathology and bacteriology. The department is in touch with most of the hospitals in Belfast, and there is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases. A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the corporation in connexion with water supply, sewage disposal, meat- and milk supply, the diagnosis of cases of infectious diseases, &c. The certificate issued to members of the class in bacteriology qualifies for the D.P.H. degree. The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines.

will be appointed by competitive examination Clinical prizes will be given by the staff at the close of the session

Cork North Charitable Infirmary and County and City of Cork General Hospital (112 beds) *—Physicians Mr D D Donovan and Dr Edward Magner Surgeons Mr C Y Pearson, Mr John Dundon, Mr N H Hobart, and Mr D J O Mahony Assistant Physician Mr R B Dalton Assistant Surgeon Mr Richard P Byrne Second Assistant Surgeon Mr D F Hegarty Resident Surgeon John Higgins Resident Physician (Vacant) Pathologist Dr W Magner Radiologist Dr C B Pearson Anæsthetist Mr D M Donovan Surgeon Dentist Mr William Pericho Dispensing Chemist Mr M Tucker Honorary Secretary Mr R B Dalton. Clinical instruction is given daily in the wards by the physicians and surgeons Special instruction is given to Junior Students on two days weekly Fee for perpetual ticket, £22 1*s* , for 12 or nine months, £9 9*s* , for six months, £5 5*s* , and for three months, £3 3*s* Two resident pupils are appointed quarterly by the medical staff All resident pupils are required to be registered pupils of the Hospital There is a special department for treatment of the eye, ear, throat, and nose under the charge of Mr J Bowring Horgan, and a Special Dental Department

Mercy Hospital —Staff Consulting Physician Dr P J Cremen Consulting Ophthalmic Surgeon Dr J J McMahon Physicians Dr C Cantillon and Dr D J O'Connor Surgeons Mr J Giusani, Mr J Dundon, and Mr R P Crosbie Ophthalmic Surgeon Mr J M Browne Ophthalmic and Aural Surgeon Mr V O Hea Cussen Surgeon Dentist Mr H O Keeffe Anæsthetist and Radiographer Mr Walter Rahilly Pathologist Dr M A Shinkwin , two resident students This hospital contains 130 beds for medical and surgical cases There is also a daily extern for medical and surgical cases as well as for diseases of the eye, ear, and throat. Extern medical attendances, 3371 , surgical attendances, 2361 , ophthalmic attendances (nose, ear and throat) 5056 , intern patients 1354 Major operations, 254 , minor operations, 567 Honorary Secretary to the Staff Dr D J O Connor

Cork District Lunatic Asylum —Psychological Medicine A course of Clinical Lectures on Mental Disease and Allied Neuroses will be delivered in the Cork District Lunatic Asylum on Mondays and Thursdays, commencing the first Thursday in May, by the Resident Medical Superintendent All students wishing to enter for the course are expected to attend at the Asylum at 4 P M on that day All information may be had at the Asylum from Dr James J FitzGerald, resident medical superintendent

Victoria Hospital (Cork) —Honorary Staff Dr Ashley Cummins, Dr C Yelverton Pearson, Dr P Lee, Dr Hobart and Dr C B Pearson Lady Superintendent Mrs George Armstrong There are 75 beds Clinical instruction on Diseases Peculiar to Children is given The extern department is open daily at 9 30

County and City of Cork Lying in Hospital (Erinville, Western road , founded 1798) —Staff Honorary Consulting Physicians Dr W E Ashley Cummins and Dr D D Donovan Honorary Obstetric Surgeon Mr C Yelverton Pearson Physicians Dr N H Hobart, Dr Lucy E Smith, Dr Daniel J O'Connor, and Dr P J O'Brien Assistant Physicians Dr E V Cantillon and Dr C B Pearson This hospital contains 20 beds Fee for six months' attendance, including clinical lectures, £3 3*s* For further particulars apply to N H Hobart honorary secretary to staff

Cork Maternity (Batchelor s Quay) —Staff Consulting Obstetric Physicians Dr T Gelston Atkins and Dr Henry Corby Obstetric Physicians Dr John Booth, Dr Michael Cagney, and Dr Walter Rahilly Examiner Dr R P Crosbie Three resident pupils are taken into the Maternity Poor women are attended at their own homes Clinical lectures are delivered during the session There is an extern department for the treatment of women's and children s diseases Fee for attendance at clinical lectures and certificate, £3 3*s* Honorary secretary to staff, Dr Henry Corby

Cork Fever Hospital —Staff Ordinary Physicians Dr D J Flynn and Dr T Callaghan Extraordinary Physician Dr D Murphy Resident Medical Officer and Registrar Dr A G Sutton Upwards of 500 cases of various forms of fever and zymotic disease are treated yearly in this hospital The Resident Medical Officer gives instruction in Practical Pharmacy, a certificate of which is necessary for the National University and Colleges of Physicians and Surgeons of Edinburgh

Cork District Hospital (Douglas road , 1200 beds) —Staff Dr W E Ashley Cummins (Professor of Medicine, University College, Cork, Examiner in Medicine, National University of Ireland), Dr J Giusani, Mr D Morrissy, and Mr James T O'Connor Resident Medical Officers Dr O Mullane and Mr M Sexton This hospital includes special buildings for fever and other infectious diseases (100 beds) , for children s diseases (100 beds) , and a Lock hospital, the only one in the South of Ireland (80 beds) It affords an extensive field for the study of all classes of diseases, acute and chronic, including special departments for gynæcology and diseases of the skin and nervous system. The physicians and surgeons visit the hospitals every morning at 10 o'clock Lectures and clinical instruction are given daily in the wards by the physicians and surgeons Further particulars may be obtained from Dr W E. Ashley Cummins 17 St Patrick's place, honorary secretary, medical staff.

Cork Eye, Ear, and Throat Hospital (Western road) —Staff Visiting Surgeon Dr Arthur W Sandford. Assistant Surgeons Dr T H D Townsend and Dr J M Browne. Consulting Physician Dr W E Ashley Cummins Consulting Surgeon D H N Hobart. House Surgeon Dr J P Hosford This hospital is open to students attending the University College and others Certificates of attendance for three or six months can be obtained The hospital contains 35 beds Over 4000 cases are treated during the year Clinical instruction is given to students attending the hospital with demonstrations on the use of special instruments A course of Lectures on Ophthalmic Surgery is delivered during the session For further information apply to Dr Arthur Sandford, 13 St. Patrick's place Cork.

UNIVERSITY COLLEGE, GALWAY SCHOOL OF MEDICINE —The College contains well lighted and ventilated dissecting room and anatomical lecture theatre , physiological, pathological, pharmaceutical, chemical, and physical laboratories , anatomical, pathological, gynæcological, and materia medica museums , as well as a large natural history and geological museum and an extensive library in which students can read and from which they can borrow books There are 14 Entrance Scholarships, value £30 and £25 each, for which Medical Students compete with other Students on the Entrance Course In the Second, Third, and Fourth Years two Scholarships in each year, value £25 each are reserved for Medical Students There are extensive grounds, a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union There are several student societies in the College including a Biological Society There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology and Pathology departments. There are ample facilities for female students. Further information can be obtained from the Registrar of the College.

Professors—Natural Philosophy A Anderson, M A., LL D Chemistry A. Senier, Ph D Natural History J Mangan M A Anatomy and Physiology J P Pye, M D D Sc Medicine R B Mahon, M D Surgery W W Brereton L R C S I Materia Medica N W Colahan, M D Midwifery R J Kinkead, M D Pathology T Walsh, M D , D P H

Clinical Instruction is given in the Galway Hospital and in the Galway Union and Fever Hospitals, containing on an average 200 patients

Galway County Hospital (60 beds) —Founded by Act of Parliament Physicians Professor R J Kinkead and Professor R B Mahon Surgeons Professor J P Pye, Professor N W Colahan, and Professor W W Brereton Gynæcologist Professor Kinkead Pathologist Professor Walsh Assistant Surgeon Dr M J O Malley Clerk Mr S J Leonard House Surgeon Dr P J Corcoran

Galway Union and Fever Hospitals (150 beds).*—A new Fever Hospital has just been built A prospectus giving details of the courses of study and examination for degrees and of the subjects for public and private foundation scholarships may be had on application

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* No returns

* No returns

QUEEN'S UNIVERSITY OF BELFAST

There are six degrees in the Faculty of Medicine of the University—viz., Bachelor of Medicine (M B), Bachelor of Surgery (B Ch.), Bachelor of Obstetrics (B A.O) Doctor of Medicine (M D), Master of Surgery (M Ch.), and Master of Obstetrics (M A.O) The University also grants a Diploma in Public Health, particulars of which will be found in the University Calendar The degrees of M B , B Ch and B A.O are the primary degrees in the Faculty of Medicine, and are conferred at the same time and after the same course of study No student is admitted to the final examination for these degrees until he has shown (1) that he is a matriculated student of the University, (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a student of Medicine by the General Council of Medical Education and Registration of the United Kingdom, (3) that he has passed the several examinations prescribed, (4) that he has attended in the University during three academic years at least the courses of study prescribed for such degrees (the Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate), and (5) that he has attained the age of 21 years. Every candidate for admission as a matriculated student of the University shall pass such Matriculation Examination or fulfil such other test of fitness as may be prescribed by the Senate which may prescribe the conditions under which students who have passed the Matriculation or Entrance Examination of any other University or College approved for that purpose (or who have fulfilled such other test of fitness as may be prescribed) may be exempted from passing the Matriculation Examination of the University For information as to Scholarships and Prizes inquiry should be made of the Secretary of the University

Primary Degrees of M B , B Ch , B A O—All candidates for these degrees must satisfy the examiners in the subjects of four examinations known as the First, Second, Third, and Fourth Medical Examinations respectively

The First Medical Examination—The subjects of this examination are Chemistry (Inorganic and Organic) Experimental and Practical Physics Botany and Zoology and Practical Botany and Zoology The examination will be divided into two parts which may be taken separately I , Chemistry, Practical Chemistry and Experimental Physics (including laboratory work), II., Botany and Zoology (including laboratory work)

The Second Medical Examination—The subjects are Anatomy and Practical Anatomy Physiology and Practical Physiology Candidates who have previously passed the First Medical Examination may present themselves for this examination at the close of their second year

The Third Medical Examination—The subjects are (1) Pathology and Practical Pathology, (2) Materia Medica, Pharmacology and Therapeutics, (3) Medical Jurisprudence, (4) Hygiene. Candidates who have previously passed the Second Medical Examination may present themselves for this examination at the close of the third year Attendance on a course in any subject of the Third Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the First Medical Examination.

The Fourth Medical Examination.—The subjects are (1) Medicine, (2) Surgery, (3) Midwifery, (4) Ophthalmology and Otology This examination may be taken in two parts I. Systematic, II., Clinical, Practical and Oral Candidates who have previously passed the Third Examination may present themselves for Part I of the Fourth Examination at the close of the fourth year provided that they have fulfilled the necessary requirements as to attendance, &c. on the courses of instruction in the subjects of examination Candidates who have passed Part I of this examination may present themselves for Part II at the close of the fifth year, provided that they have fulfilled the necessary requirements as to hospital attendance on the various clinical courses in the subjects of examination Parts I and II may be taken together at the close of the fifth year Attendance on a course in any subject of the Fourth Medical Examination shall not entitle a student to a certificate of attendance unless he has previously passed in all the subjects of the Second Medical Examination

Degrees of M D , M Ch , and M A O—These degrees are not conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science of at least two academic years, after admission to the primary degrees in the *Faculty of Medicine. Every candidate must show that in* the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed These degrees may be conferred by the Senate either (*a*) after an examination, which includes written, oral, clinical, and practical examinations, or (*b*) on the submission of a thesis or other evidence of original study or research to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof

The Medical School—The Donald Currie Chemical Buildings contain a lecture theatre, a preparation room, a chemical museum, a large class room for elementary practical chemistry, laboratories for qualitative and quantitative analysis, rooms for water and gas analysis, dark room for photographic purposes and balance room, provided with all modern appliances The Anatomical Department contains a large and well lighted dissecting room, a lecture-room, a professor's and demonstrator s room, a bone-room, and a laboratory for microscopic and photographic work The Medical Museum is in the same building The Jaffé Laboratories for Physiology comprise a lecture theatre, laboratories for practical work in chemical physiology, histology, and experimental physiology and in addition small private research rooms, including balance, galvanometer, and centrifuge rooms The Musgrave Pathological Laboratory—In this department opportunity is afforded for research in pathology and bacteriology The department is in touch with most of the hospitals in Belfast, and there is an ample supply of material for investigation by graduates in morbid histology, clinical pathology, and the bacteriology of infectious diseases A course in pathology or bacteriology is given to graduates, and members of this class have an opportunity of seeing the methods employed in the various investigations carried out in the department for the Public Health Committee of the corporation in connexion with water supply sewage disposal meat- and milk supply, the diagnosis of cases of infectious diseases, &c The certificate issued to members of the class in bacteriology qualifies for the D P H degree The Pharmaceutical Laboratory is fitted and equipped for the work of practically instructing students in the compounding and dispensing of medicines

The Teaching Staff of the Faculty of Medicine—Professors—Physics W Blair Morton M A Chemistry (Vacant) Zoology Gregg Wilson M A , D Sc. Botany R H Yapp M A Anatomy J Symington, M D F R S Physiology (Dunville Professor) T H Milroy M.D , B Sc Materia Medica Sir William Whitla M A., M D Pathology (Musgrave Professor) W St Clair Symmers, M B Medicine J A. Lindsay, M D Surgery T Sinclair, M D M Ch. F R C S Eng Midwifery Sir John Byers M D , M Ch Lecturers—Applied Anatomy P T Crymble M B , F R.C S Edin Medical Jurisprudence W St C Symmers, M B , and T Houston M D Ophthalmology and Otology J A. Craig M B , F R C S Hygiene W J Wilson, M.D D P H Bio Chemistry J A. Milroy M D Physics R T Beatty, M A., D Sc Organic Chemistry A K Macbeth, M A , D Sc Vaccination J M Liesh M B D P H Assistants and Demonstrators—Anatomy Margaret Purse M B , Grace English M B Physiology (Vacant) Practical Pharmacy V G L Fielden M B Ph C Riddel Demonstrator in Pathology and Bacteriology H P Malcolm M B Clinical Pathology T Houston M D Medicine S I. Turkington M D D P H Surgery S T Irwin M B , F R C S Edin Midwifery (Vacant) Internal Examiner in Sanitary Science H W Bailie L R.C P & S Edin , D P H University Clinical Lecturers—Medicine P E O Flaherty M B Surgery A B Mitchell M B F R C S Eng Midwifery J Campbell M D , F R C S Eng Ophthalmology J W Browne M D

Clinical instruction—The following institutions are recognised by the University as affording proper opportunities for clinical instruction the Royal Victoria Hospital, the Mater Infirmorum Hospital, the Union Hospitals the Belfast will be appointed by competitive examination Clinical prizes will be given by the staff at the close of the session

Cork North Charitable Infirmary and County and City of Cork General Hospital (112 beds) *—Physicians Mr D D Donovan and Dr Edward Magner Surgeons Mr C Y Pearson, Mr John Dundon, Mr N H Hobart, and Mr D J O Mahony Assistant Physician Mr R B Dalton Assistant Surgeon Mr Richard P Byrne Second Assistant Surgeon Mr D F Hegarty Resident Surgeon John Higgins Resident Physician (Vacant) Pathologist Dr W Magner Radiologist Dr C B Pearson Anæsthetist Mr D M Donovan Surgeon Dentist Mr William Pericho Dispensing Chemist Mr M Tucker Honorary Secretary Mr R. B Dalton Clinical instruction is given daily in the wards by the physicians and surgeons Special instruction is given to Junior Students on two days weekly Fee for perpetual ticket, £22 1*s* , for 12 or nine months, £9 9*s* , for six months £5 5*s* , and for three months, £3 3*s* Two resident pupils are appointed quarterly by the medical staff All resident pupils are required to be registered pupils of the Hospital There is a special department for treatment of the eye, ear, throat, and nose, under the charge of Mr J Bowring Horgan, and a Special Dental Department

Mercy Hospital —Staff Consulting Physician Dr P J Cremen Consulting Ophthalmic Surgeon Dr J J McMahon Physicians Dr C Cantillon and Dr D J O'Connor Surgeons Mr J Giusani, Mr J Dundon, and Mr R P Crosbie Ophthalmic Surgeon Mr J M Browne Ophthalmic and Aural Surgeon Mr V O Hea Cussen Surgeon Dentist Mr H O Keeffe Anæsthetist and Radiographer Mr Walter Rahilly Pathologist Dr M A Shinkwin , two resident students This hospital contains 130 beds for medical and surgical cases There is also a daily extern for medical and surgical cases as well as for diseases of the eye, ear, and throat. Extern medical attendances, 3371 , surgical attendances 2361 , ophthalmic attendances (nose, ear and throat), 5056 , intern patients 1354 Major operations, 254 , minor operations, 567 Honorary Secretary to the Staff Dr D J O Connor

Cork District Lunatic Asylum —Psychological Medicine A course of Clinical Lectures on Mental Disease and Allied Neuroses will be delivered in the Cork District Lunatic Asylum on Mondays and Thursdays, commencing the first Thursday in May, by the Resident Medical Superintendent All students wishing to enter for the course are expected to attend at the Asylum at 4 P M on that day All information may be had at the Asylum from Dr James J FitzGerald, resident medical superintendent

Victoria Hospital (Cork) —Honorary Staff Dr Ashley Cummins, Dr C Yelverton Pearson, Dr P Lee, Dr Hobart, and Dr C B Pearson Lady Superintendent Mrs George Armstrong There are 75 beds Clinical instruction on Diseases Peculiar to Children is given The extern department is open daily at 9 30

County and City of Cork Lying in Hospital (Ennville, Western road , founded 1798) —Staff Honorary Consulting Physicians Dr W E Ashley Cummins and Dr D D Donovan Honorary Obstetric Surgeon Mr C Yelverton Pearson Physicians Dr N H Hobart, Dr Lucy E Smith, Dr Daniel J O'Connor, and Dr P J O'Brien Assistant Physicians Dr E V Cantillon and Dr C B Pearson This hospital contains 20 beds Fee for six months' attendance, including clinical lectures, £3 3*s* For further particulars apply to N H Hobart honorary secretary to staff

Cork Maternity (Batchelor s Quay) —Staff Consulting Obstetric Physicians Dr T Gelston Atkins and Dr Henry Corby Obstetric Physicians Dr John Booth, Dr Michael Cagney, and Dr Walter Rahilly Examiner Dr R P Crosbie Three resident pupils are taken into the Maternity Poor women are attended at their own homes Clinical lectures are delivered during the session There is an extern department for the treatment of women s and children's diseases. Fee for attendance at clinical lectures and certificate, £3 3*s* Honorary secretary to staff, Dr Henry Corby

Cork Fever Hospital.—Staff Ordinary Physicians Dr D J Flynn and Dr T Callaghan Extraordinary Physician Dr D Murphy Resident Medical Officer and Registrar Dr A G Sutton Upwards of 500 cases of various forms of fever and zymotic disease are treated yearly in this hospital The Resident Medical Officer gives instruction in Practical Pharmacy, a certificate of which is necessary for the National University and Colleges of Physicians and Surgeons of Edinburgh

Cork District Hospital (Douglas-road , 1200 beds).—Staff Dr W E Ashley Cummins (Professor of Medicine University College, Cork, Examiner in Medicine, National University of Ireland), Dr J Giusani, Mr D Morrissy, and Mr James T O Connor Resident Medical Officers Dr O Mullane and Mr M Sexton This hospital includes special buildings for fever and other infectious diseases (100 beds) , for children s diseases (100 beds) , and a Lock hospital, the only one in the South of Ireland (80 beds) It affords an extensive field for the study of all classes of diseases, acute and chronic, including special departments for gynæcology and diseases of the skin and nervous system. The physicians and surgeons visit the hospitals every morning at 10 o clock Lectures and clinical instruction are given daily in the wards by the physicians and surgeons Further particulars may be obtained from Dr W E. Ashley Cummins 17 St Patrick's place, honorary secretary, medical staff

Cork Eye, Ear, and Throat Hospital (Western road)—Staff Visiting Surgeon Dr Arthur W Sandford. Assistant Surgeons Dr T H D Townsend and Dr J M Browne Consulting Physician Dr W E Ashley Cummins. Consulting Surgeon Dr H N Hobart House Surgeon Dr J P Hosford This hospital is open to students attending the University College and others Certificates of attendance for three or six months can be obtained The hospital contains 35 beds Over 4000 cases are treated during the year Clinical instruction is given to students attending the hospital, with demonstrations on the use of special instruments A course of Lectures on Ophthalmic Surgery is delivered during the session For further information apply to Dr Arthur Sandford, 13, St. Patrick's place, Cork

UNIVERSITY COLLEGE, GALWAY SCHOOL OF MEDICINE —The College contains well lighted and ventilated dissecting room and anatomical lecture theatre , physiological, pathological, pharmaceutical, chemical, and physical laboratories , anatomical, pathological, gynæcological, and materia medica museums , as well as a large natural history and geological museum and an extensive library in which students can read and from which they can borrow books There are 14 Entrance Scholarships, value £30 and £25 each, for which Medical Students compete with other Students on the Entrance Course In the Second, Third, and Fourth Years two Scholarships in each year, value £25 each are reserved for Medical Students There are extensive grounds, a portion of which is occupied by a Botanic Garden and a portion is at the disposal of the College Athletic Union There are several student societies in the College, including a Biological Society There are abundant facilities for research and Post-graduate work in the Chemistry, Physiology and Pathology departments. There are ample facilities for female students Further information can be obtained from the Registrar of the College

Professors—Natural Philosophy A Anderson, M A., LL D Chemistry A. Senier, Ph D Natural History J Mangan M A Anatomy and Physiology J P Pye, M D D Sc Medicine R B Mahon, M D Surgery W W Brereton, L R C S I Materia Medica N W Colahan, M D Midwifery R J Kinkead, M D Pathology T Walsh, M D , D P H

Clinical Instruction is given in the Galway Hospital and in the Galway Union and Fever Hospitals, containing on an average 200 patients

Galway County Hospital (60 beds).—Founded by Act of Parliament Physicians Professor R J Kinkead and Professor R B Mahon Surgeons Professor J P Pye, Professor N W Colahan, and Professor W W Brereton Gynæcologist Professor Kinkead Pathologist Professor Walsh Assistant Surgeon Dr M J O Malley Clerk Mr S J Leonard House Surgeon Dr P J Corcoran

Galway Union and Fever Hospitals (150 beds) *—A new Fever Hospital has just been built A prospectus giving details of the courses of study and examination for degrees and of the subjects for public and private foundation scholarships may be had on application

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* No returns

* No returns

ROYAL COLLEGE OF PHYSICIANS OF IRELAND AND ROYAL COLLEGE OF SURGEONS IN IRELAND

Every candidate for the Conjoint Examinations of the Colleges shall produce evidence of having before entering on medical studies passed a Preliminary Examination in general education recognised by the Royal Colleges Each candidate before receiving his diplomas must produce a registrar s certificate or other satisfactory evidence that he has attained the age of 21 years

Preliminary Examination —The subjects for examination are identical with those prescribed for the Preliminary Examination by the General Council of Medical Education and Registration

Professional Examinations —Every candidate must pass four Professional Examinations—at the end of the first, second, third, and fifth years respectively of his professional studies No candidate shall be admitted to the Final or Qualifying Examination within three months of his rejection at the Final or Qualifying Examination by any other licensing body

First Professional Examination —Every candidate is required, before admission to the First Professional Examination, to produce evidence—(1) of having passed in the subjects of the Preliminary Examination, and (2) of having attended a course of—(*a*) lectures on Theoretical Chemistry, six months, (*b*) Practical Chemistry, three months, (*c*) Biology, three months, and (*d*) Physics

The subjects of the First Professional Examination are the following —1. (*a*) Chemistry, (*b*) Physics 2 Biology The fee for this examination is £15 15s

Second Professional Examination —Candidates are not admissible to this examination till they have passed in the subjects of the First Professional Examination, and they must produce evidence of having attended (*a*) anatomical dissections six months, and Lectures on (*b*) Anatomy, six months, (*c*) Physiology, six months, (*d*) Practical Physiology and Histology three months

The subjects of the Second Professional Examination are the following —(1) Anatomy, and (2) Physiology and Histology The fee for this examination is £10 10s

Third Professional Examination —Every candidate is required, before admission to the Third Professional Examination to produce evidence of having passed the Second Professional Examination, and certificates of having attended courses of instruction in (*a*) the practice of a medico chirurgical hospital for nine months, (*b*) Pathology—(1) Systematic (2) Practical, three months each, (*c*) Materia Medica Pharmacy and Therapeutics, three months, (*d*) Forensic Medicine and Public Health three months The subjects for the Third Professional Examination are the following —(1) Pathology, (2) Materia Medica, Pharmacy and Therapeutics, (3) Public Health and Forensic Medicine The fee for this examination is £9 9s

Final Professional Examination —Before admission to the Final Examination candidates must have passed the Third Professional Examination and produced evidence of having attended in Division I. the practice of a medico-chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission in Division II), the practice of a recognised fever hospital or the fever wards of a recognised clinical hospital three months, clinical instruction in Mental Diseases, one month (12 attendances), Lectures on Medicine six months at a recognised medical school, of having performed the duties of medical clinical clerk in a recognised hospital for three months, of having attended a course of instruction in post-mortem examinations and demonstrations during one session In Division II of having attended the practice of a medico chirurgical hospital for two periods of nine months each (unless such evidence has been previously produced for admission to Division I), clinical instruction in Ophthalmic and Aural Surgery three months lectures on Surgery six months at a recognised medical school, instruction in Operative Surgery three months at a recognised medical school, of having performed the duties of surgical dresser in a recognised hospital for three months, of having attended a course of instruction in the practical administration of general anæsthetics In Division III of having attended a midwifery hospital or maternity and having been present at 20 labours six months, instruction on vaccination, six attendances to be certified by a public vaccinator, lectures on midwifery (including diseases peculiar to women and to new born children), six months at a recognised medical school Candidates are recommended to present themselves in all the subjects of the Final Examination at one time, but a candidate at or after the end of the fourth year may present himself in any one of the Divisions I, II, or III, provided he has completed his curriculum as far as concerns the division in which he presents himself The examination in at least one of the divisions must be deferred till the end of the fifth year

The subjects of the Final Examination are (1) Medicine, including Fevers, Mental Diseases, and Diseases of Children, (2) Surgery, Operative and Ophthalmic, and (3) Midwifery and Gynæcology, Vaccination and Diseases of New born Children The fee is £6 6s Further particulars can be obtained from Alfred Miller the Secretary of the Committee of Management, Royal College of Surgeons, Stephen's green, Dublin

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ROYAL COLLEGE OF SURGEONS IN IRELAND (SCHOOLS OF SURGERY) —The schools of surgery are attached by Charter to the Royal College of Surgeons and have existed as a department of the College for over a century They are carried on within the College buildings and are specially subject to the supervision and control of the Council, who are empowered to appoint and remove the professors and to regulate the methods of teaching pursued The buildings have been reconstructed, the capacity of the dissecting room nearly trebled and special pathological, bacteriological, public health, and pharmaceutical laboratories fitted with the most approved appliances in order that students may have the advantage of the most modern methods of instruction There are special rooms set apart for lady students The entire building is heated by hot-water pipes and lighted throughout by the electric light. Winter Session commences in October, Summer Session in April Prospectuses and guide for medical students can be obtained post free on written application to the Registrar, Royal College of Surgeons, Stephen's green, W, Dublin Information is given therein as to the scholarships and prizes at the College

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APOTHECARIES HALL OF IRELAND

The Licence of this Hall is granted to students who present certificates of having fully completed the course of study as laid down in the curriculum and who pass the necessary examinations The diploma of the Apothecaries' Hall of Ireland entitles the holder to be registered as a practitioner in medicine, surgery, and midwifery, with also the privileges of the Apothecary s Licence There are three professional examinations, the total fees for which amount to 24 guineas Women are eligible for the diploma

There are four examinations—primary, intermediate, Parts I and II, and final They are held three times a year, in March, June, and December The primary examination comprises biology, physics, theoretical and practical chemistry (with an examination at the bench) Candidates holding a Pharmaceutical licence are exempt from this subject. The intermediate examination comprises anatomy of the whole body (including practical dissections) physiology, practical histology and materia medica. The final examination comprises medicine, surgery, and midwifery

Each candidate before receiving his diploma must produce evidence that he has attained the age of 21 years The details of the course of education required and syllabus of the examinations will be supplied on application to the Registrar at 40 Mary street Dublin

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HOSPITALS AFFORDING PRACTICE RECOGNISED BY THE IRISH UNIVERSITIES AND CORPORATIONS [1]

ADELAIDE MEDICAL AND SURGICAL HOSPITAL, Peter-street Dublin —Fee for nine months hospital attendance, £12 12s, six months £8 8s Summer three months £5 5s

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[1] This list of the institutions recognised by the Conjoint Board of Ireland is supplemented in the regulations of the Colleges by those hospitals mentioned as recognised institutions in Scotland and England The recognised facilities for clinical instruction in Belfast Cork and Galway have been described in connexion with the Belfast and National Universities

Hospital for Sick Children, the Belfast Maternity, the Ulster Hospital for Women and Children, the Ulster Eye, Ear, and Throat Hospital, the Belfast Ophthalmic Hospital, the Purdysburn Fever Hospital, and the Belfast District Lunatic Asylum

The Royal Victoria Hospital (300 beds) —Physicians Professor Sir William Whitla, Professor James A Lindsay, Dr William Calwell, and Dr H L McKisack Surgeons Professor T Sinclair, Mr A B Mitchell, Mr T S Kirk, and Mr R Campbell Gynæcologist Professor Sir John Byers Surgeon for Diseases of the Eye, Ear, and Throat Mr James A Craig Pathologist Professor W St C Symmers Physician for Diseases of the Skin Dr W Calwell Physicians in charge of Out-patients Dr J S Morrow Dr J E McIlwaine Surgeons in charge of Out patients Mr *Andrew Fullerton, Mr Howard Stevenson* Gynæcologist in charge of Out-patients Mr R J Johnstone Surgeon in charge of Out-patients, Eye, Ear, and Throat Department Mr Henry Hanna Assistant to the Pathologist (Vacant) Administrators of Anæsthetics Dr V G L. Fielden and Dr *W J Taggart* Medical Electrician Dr J C Rankin Hæmatologist Dr Thomas Houston Medical Registrars Dr Foster Coates and Dr F B Elwood Surgical Registrar *Mr S T Irwin Many of the staff are* on active service Women students are now admitted as resident medical pupils the same as men

Mater Infirmorum Hospital (200 beds) —Consulting Physician Sir Alexander Dempsey Physicians Mr W M Lorinan Dr W W D Thomson, and Dr P E O *Flaherty* Surgeons Sir Peter R O Connell, Mr J B *Moore*, and Mr John O Doherty Clinical Assistant in Surgery Dr D McSparran Clinical Assistant in Gynæcology Dr A J Dempsey Anæsthetist Dr D McSparran Gynæcologist Sir Alexander Dempsey Ophthalmic Surgeon Mr H Mulholland *Pathologist Dr W St. Clair Symmers* Clinical Pathologist Dr W W D Thomson Registrar Mr O Doherty Honorary Secretary Medical Staff Mr J B Moore Dental Surgeon Mr Maurice Maguire. House Physician Dr McSorley House Surgeon Dr McKee

Belfast Union Infirmary and Hospital (1700 beds) —Visiting Medical Officers Dr Robert Hall Dr John M Leish, Dr Joseph Fulton, and Dr A Gardner Robb Ophthalmic *Surgeon Mr Henry Hanna Dental Surgeon Mr* W Marshall Swan, L D S Eng Also four Resident Medical Officers

Hospital for Sick Children, Queen street (52 beds) —Consulting Physicians Dr B Smyth, Sir J W Byers, and Dr F H Sinclair Attending Physicians Dr J McCaw and Dr R L Leathem Honorary Attending Assistant Physicians Dr M B Smyth and Dr Rowland Hill Consulting Surgeons Sir J Fagan and *Mr W G Mackenzie Attending* Surgeons Mr T S Kirk and Mr R Campbell Honorary Attending Assistant Surgeons Mr A Fullerton and Mr P T Crymble Ophthalmic Surgeon Mr W K McCready Pathologist Professor W St. C Symmers Surgeon Dentist Mr N *White Anæsthetist Dr W Burnside* Honorary Attending Physicians to Convalescent Home (Carrickfergus) Dr James A Clarke and Dr J Houston Honorary Secretary, Medical Staff John McCaw, M D

Maternity Hospital, Townsend street (32 beds) —Honorary Consulting Physician Dr Brice Smyth Honorary Consulting Surgeon Mr J Campbell Honorary Visiting Physicians Dr H D Osborne, Sir John Byers, Dr R J Johnstone, and Dr Malcolm Brice Smyth

Ulster Hospital for Children and Women (44 beds) —Acting Staff, Children's Department—Physicians Dr J D Williamson and Dr R. W Leslie Assistant Physician Dr F C Smyth Surgeons Mr H Stevenson and Mr M Nelson *Ophthalmic Surgeon* Mr H H B Cunningham Women's Department—Dr C G Lowry and Mr T Holmes Pathologist Dr T Houston Obstetric Physician Dr J D Williamson

Benn Ulster Eye Ear and Throat Hospital (30 beds) *—Consulting *Physician* Professor *J A Lindsay* Consulting Surgeon Professor T Sinclair Acting Surgeon W M Killen Assistant Surgeons I A Davidson and W A Anderson Anæsthetist W Dickey Pathologist W W D Thompson Physician and Assistant Pathologist S W M'Comb

Belfast Ophthalmic Hospital, Great Victoria street (30 beds) —Practical demonstrations by the staff and occasional clinical *lectures in the subjects* of Ophthalmology, Otology, Laryngology, and Neurology Consulting Physician Sir W Whitla Surgeon Mr J W Browne Assistant Surgeons Mr H H B Cunningham Mr *Wiclif McCready*, and Mr W A Anderson Assistant Physician Dr Rowland Hill Clinical *instructions* is given daily Fee for three months £2 2*s*

City Fever Hospitals, Purdysburn (330 beds) —Physician in Charge Dr A *Gardner Robb Clinical Classes* are held during the winter and summer sessions

District Lunatic Asylum (1250 beds).—Resident Medical Superintendent W Graham, M D Assistant Medical Officers Dr S J Graham, Dr N B Graham, and Dr W R *Tyrrell Consulting* and Visiting Physician R. J. Purdon, M D

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* No returns

IRISH MEDICAL CORPORATIONS GRANTING DIPLOMAS

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The College issues its Licences in Medicine and in Midwifery to practitioners whose names appear on the Medical Register of the United Kingdom

The Licence in Medicine —The subjects of examination are Practice of Medicine, Clinical Medicine, Pathology, Medical Jurisprudence, Midwifery, Hygiene, and Therapeutics.

The Licence in Midwifery —Candidates must produce certificates of registration A registered medical practitioner of five years' standing may be exempted from the examination by printed questions

The Membership —Examinations for Membership are held in February, June and November The fee for the examination is £21 to Licentiates of the College, or £36 15*s* to non Licentiates Further particulars can be obtained from the Registrar of the Royal College of Physicians of Ireland, Kildare street, Dublin

The Fellowship —Fellows are elected by ballot. Applicants must have been a Member of the College for at least one year and must have attained the age of 27 years There is a fee of £35 in addition to a stamp duty of £25

ROYAL COLLEGE OF SURGEONS IN IRELAND

The Licence in Surgery —A candidate whose name is entered either on the Medical Register for the United Kingdom the Colonial Medical Register, or the *Foreign* Medical Register of the year in which he presents himself for examination, and who satisfies the Council that he has passed *through* a course of *study* and Examinations equivalent to those required by the Regulations of the Conjoint Board *of* the Royal College of Physicians *of* Ireland and the Royal College of Surgeons in Ireland, preceded by the passing of an Examination in Arts recognised *by the* General *Medical* Council, *may*, at the discretion of the Council, be admitted to the Examination

Candidates are examined in Surgery, Clinical Surgery, Operative Surgery on the subject, Surgical Appliances, and Ophthalmic Surgery

Diploma in Midwifery —A diploma in Midwifery is granted after examination to persons possessing a registrable qualification

Fellowship Examinations —Candidates for the Fellowship shall make application to the President and Council *to be* admitted to examination They *are* required to pass two examinations—Primary and Final. Candidates may present themselves for the Final Examination *immediately* after passing the Primary part, provided they have complied with the necessary regulations The subjects for the *Primary* Examination are (*a*) Anatomy including Dissections, and (*b*) Physiology and Histology The subjects for the Final Examination are Surgery, including Surgical Anatomy and Pathology For admission to the Final Examination the candidate must have passed the *Primary* Examination, and *must be a Licentiate or Graduate* in Surgery of a university or licensing body recognised by the General Medical Council, all such candidates must not *be less* than 25 years of age.

Further particulars as to fees and conditions of examination can be obtained from the Registrar of the College, Stephen s-green, West Dublin prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c., may be obtained from the Secretary, Medical Board.

Meath Hospital and County Dublin Infirmary — Physicians Sir John William Moore, Dr Edward E Lennon, and Dr William Boxwell. Surgeons Sir L H Ormsby, Mr William Taylor, Mr R. Lane Joynt, Dr Oliver St. J Gogarty, and Mr Henry Stokes Gynæcologist Dr F W Kidd Clinical Assistant Dr Mather Thomson Pathologist Dr Brontë House Surgeons Mr E V Tivy and Mr L S Barrett This hospital was founded in 1753 and now contains 166 beds available for clinical teaching A building containing 40 beds for the isolated treatment of fevers is attached to the hospital The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom Six Medical Clinical Clerks and 12 Surgical Resident Pupils and Dressers are appointed every six months, and House Surgeons and Clinical Assistants are elected annually A prospectus giving the complete arrangements for the coming session may be obtained from the Honorary Treasurer of the Medical Board, Sir L. H. Ormsby 92, Merrion square, Dublin.

—Mercer's Hospital.—This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes walk of Trinity College. It contains 120 beds for medical and surgical cases and arrangements have been made with the medical officers of Cork street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction. There are special wards for the treatment and study of children's diseases During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements

Appointments —A House Surgeon is appointed annually There are Five Resident Pupils, and Clinical Clerks and Dressers are appointed monthly from amongst the most deserving members of the class Women students are admitted.

Fees —Winter, six months £8 8*s* , Summer, three months, £5 5*s* , nine months, £12 12*s*

Consulting Physician Dr J Magee Finny Consulting Surgeon (Vacant). Consulting Gynæcologist Dr J H. Glenn. Consulting Ophthalmic Surgeon Mr J B Story Physicians Dr J Lumsden and Dr F Purser urgeons Mr R. O B Maunsell, Mr S S Pringle, and W Ireland de C Wheeler Gynæcologist Dr Bethel olomons Radiologist Dr T G Hardman. Pathologist r J T Wigham Anæsthetist Dr J Beckett Dentist Cockburn, L D S

For further particulars apply to Dr Bethel Solomons Sec., Medical Board, 30, Lower Baggot-street, Dublin.

National Maternity Hospital, Holles-street Dublin.— tablished 1894 Masters Sir Andrew J Horne and Dr R. J The large number of cases at the hospital give eat opportunities for practical work. Arrangements are de for post-graduate and special courses Certificates of endance at the hospital are recognised by all the licensing dies For further particulars apply to the Masters

ichmond Whitworth, and Hardwicke Hospitals Brunswick-street, Dublin —These hospitals contain beds—130 for Surgical cases 70 for Medical cases, Fever and other Epidemic Diseases and an Auxiliary of 40 beds for sick soldiers A Resident Phy and a Resident Surgeon are appointed each half are paid for their services 12 Resident Clinical are appointed each quarter and provided with apartments, fuel &c. These appointments are ot only to advanced Students but also to those who alified in Medicine and Surgery The Dressers are from among the best qualified of the pupils without ment of any additional fee. Women students are for election as residents and special apartments rved for their use For prospectuses apply Adams McConnell, F R C S I, Hon. Secretary, illiam square, Dublin

Rotunda Hospital, Dublin.*—This institution is the largest combined gynæcological and maternity hospital in the British Empire. Women students can reside in the hospital on terms similar to those for men. Master Dr Henry Jellett Assistants Dr Simpson and Dr Gilmor Pathologist Dr R J Rowlette For further particulars apply to the Master

Royal City of Dublin Hospital.—Founded 1832, enlarged 1851, rebuilt 1893 150 beds Consulting Physician Sir Hawtrey Benson. Physicians Dr A R. Parsons and Dr T G Moorhead Surgeons Mr G J Johnston, Mr H Moore, and Mr R A Stoney Ophthalmic and Aural Surgeon Mr Frank C Crawley Gynæcologist Mr G Fitzgibbon Ear, Throat, and Nose Surgeon Dr T O Graham Anæsthetist Mr G P Meldon Dental Surgeon Mr D L Rogers Secretary Mr Edw B Armstrong

Royal Victoria Eye and Ear Hospital, Dublin — Established 1844 Incorporated 1897 102 beds Consulting Physician Dr R A Hayes. Consulting Dental Surgeon Mr A. W W Baker Surgeons Mr J B Story, Mr Louis Werner, and Mr H O Mooney Assistant Surgeons Mr F C Crawley, Mr J O Cummins Mr R. H Mathews and Miss E Maxwell (on service in Malta). Clinical Assistant Miss Georgina Prosser Surgeon to Dispensary for Throat Dr T O Graham (on service in France) Surgical Radiographer Mr W S Haughton Registrar Mr G A. Howell Anæsthetists Dr J Beckett and Dr T A Watson In-patients, 1571, out-patients, 9363 Two house surgeons appointed annually

Dr Steevens' Hospital, Dublin. — Established 1720 250 beds Consulting Physicians Dr J O'Carroll, Dr J Craig, and Dr J M Purser Consulting Surgeon Sir Arthur Chance. Physicians Dr R. A. Hayes, Dr T P C Kirkpatrick, and Dr W A. Winter Assistant Physician Dr J J Purser Surgeons Mr R. B McCausland, Mr W S. Haughton Mr Arthur Chance, and Mr W C Stevenson Assistant Surgeon Dr W A. Cooke. Anæsthetist Dr W H. Lowe. Obstetric Physician and Gynæcologist Dr E H. Tweedy Ophthalmic and Aural Surgeon Dr R. H Mathews Pathologist Dr W M Crofton Dental Surgeon Mr G M P Murray Resident Surgeon Dr J A. Small. X Rayist Dr H. W Mason Assistant X Rayist Mr G E Pepper Scientific Adviser Mr John Joly D Sc., F R.S Assistant Dental Surgeon Mr H Hayes Secretary Mr R J Ogden. Patients 1591

St Vincent's Hospital and Dispensary Dublin.*— Established 1834 160 beds Physicians and Lecturers on Medicine Dr M F Cox, Dr W J Dargan and Dr Meenan Physician for Extern Department Dr Magennis Surgeons and Lecturers on Surgery Mr J S McArdle, Mr R F Tobin, and Mr D J Kennedy Surgeon to Extern Department Mr H. Meade Gynæcologist and Lecturer on Gynæcology Mr A. J Smith. Pathologist and Lecturer on Pathology Dr T T O Farrell. Surgeon Dentist and Lecturer on Dentistry Mr J J Murphy Pharmacist and Lecturer on Pharmacy R. Shaw

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* No returns

The Wellcome Historical Medical Museum, 34A, Wigmore-street, London W will be closed for cleaning from Sept 1st to the 30th inclusive

The Austin Edwards X Ray Films —We have tested the Austin Edwards X ray films and find them to have certain advantages over the more usual glass plates Apart from the inherent qualities of a light flexible and unbreakable support these are coated on both sides which not only prevents curling but gives a double thickness of deposit This means that much shorter exposures can be employed A further advantage is that several films can be developed at once effecting a considerable saving of time in the dark room For all ordinary cases these films are very satisfactory and should be specially valuable in military work The fact remains however, that celluloid is not so transparent as well selected glass and becomes less so when coated on both sides with gelatine consequently a film will always lack the brilliancy of a glass plate coated one side only Where it is essential to show fine and delicate detail as in certain bone diseases and pulmonary affections, the glass plate is still the best

Staff —Physicians Dr Wallace Beatty, Dr H Bewley, and Dr G Peacocke Surgeons Mr T E Gordon, Mr L G Gunn, and Mr W Pearson Obstetric Surgeon Sir W J Smyly Ophthalmic Surgeon Mr J B Story Throat Surgeon Dr S Horace Law Pathologist Dr A Stokes Assistant Physician Dr W G Harvey Anæsthetist Dr Piel

Two resident surgeons are elected yearly and four resident pupils half yearly At the termination of the session prizes in Clinical Medicine and Surgery and in Dermatology will be awarded

Hudson Scholarship —In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10, together with a silver medal, will be awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology

The certificates of attendance are recognised by all the Universities and licensing bodies in the United Kingdom Further particulars may be obtained from Dr H Bewley

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Coombe Lying in Hospital and Guinness Dispensary for the Treatment of Diseases Peculiar to Women, Dublin—This hospital contains nearly 70 beds and consists of two divisions, one of which is devoted to lying in cases and the other to the treatment of diseases peculiar to women The practice of this hospital is one of the largest in Ireland Lectures are delivered, practical instruction given, and gynæcological operations are performed in the theatres daily There is a general dispensary held daily, at which instruction is given on the Diseases of Women and Children There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynæcology is given There is no extra charge for attendance at this dispensary There is accommodation for intern pupils who enjoy exceptional advantages of acquiring a thorough knowledge of this branch of their profession Lady medical students can reside in the hospital The residents' quarters are comfortable Clinical assistants are appointed from amongst the pupils as vacancies occur Certificates of attendance at this hospital are accepted by all licensing bodies Fees Extern pupils for full course of six months £8 8*s*, three months, £4 4*s* Intern pupils, one month £4 4*s*, each consecutive month, £3 3*s*, six months, £18 18*s*, board and lodging in the hospital, 21*s* per week Lady students intern, one month, £4 4*s*, each consecutive month, £3 3*s* Registration fee, in advance, 10*s* 6*d* Students can enter for attendance at any time, but preference is given to those entering from the first day of the month Further particulars may be had on application to the Master or the Registrar at the hospital

Staff—Master Dr R A MacLaverty Assistant Masters Dr D O Morris and Dr Loy Registrar Fred. A Heney Consulting Physicians Sir John W Moore and Sir J M Redmond Consulting Surgeons Dr F W Kidd Dr M J Gibson, and Dr W Taylor Pathologist Dr E J McWeeney Pathological Analyst Sir C A Cameron

Sir Patrick Dun's Hospital, Grand Canal street Dublin—Classes both in Medicine and Surgery are held each morning from 9 o'clock from Oct 1st till the end of June Special classes for junior students will be held in the wards during the months of October, November, and December The surgical operating theatre is thoroughly in accord with modern surgical requirements Instruction in the Diseases of Women is given on Tuesdays and Fridays at 10 A M There is a special wing devoted to fever cases Pathological and Bacteriological Demonstrations will be given on Fridays at 10 30 A.M, when there is suitable material A department for the special treatment of Throat, Nose and Ear Diseases is under the direction of Sir Robert H Woods Instruction will be given in these subjects and in the use of the Laryngoscope and Otoscope to senior students on Mondays and Thursdays Practical instruction is given in anæsthetics to senior students Practical demonstrations are given in Dentistry on Wednesdays and Saturdays Opportunities are given the members of the hospital class of seeing the various applications of the X rays to the diagnosis and treatment of injury and disease Opportunities are also afforded in the out-patient department for the diagnosis and treatment of the numerous minor ailments not met with in the hospital wards A Resident Surgeon, with salary is appointed annually Six Resident Pupils are appointed each half year Six Surgical Dressers and six Clinical Clerks are appointed each month There are facilities for women students

Prizes and Medals—Clinical medals and prizes amounting to about £15 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev Samuel Haughton, M D, S F T C D Candidates who fail to obtain these medals and prizes will be awarded special certificates in Medicine and in Surgery provided they show sufficient merit

Fees—Winter and summer session, £12 12*s*, winter session (six months), £8 8*s*, and summer session (three months), £5 5*s* Special certificate in anæsthetics, £1 1*s* The practice of this hospital is open to all students, and the certificates are recognised by Dublin University the National University and Royal Colleges of Surgeons of England, Ireland, and Scotland

Consulting Physicians Dr J M Purser and Dr J Magee Finny Physicians Professor W G Smith, Dr H C Drury, Professor James Craig, and Professor T Henry Wilson Assistant Physician Dr E J Watson Surgeons Professor E H Taylor, Sir C A K Ball, Bart., and Dr C M Benson Pathologist Professor A C O Sullivan Department for Throat, Nose, and Ear Professor Sir Robert H Woods X Ray Department Dr E J Watson Anæsthetist Dr W C P Smyly Dentist Mr J I Kelly House Surgeon (Vacant)

Further information will be supplied by the Hon. Secretary to the Medical Board, Dr H C Drury

Jervis Street Hospital, Dublin—Founded 1718, rebuilt 1886 130 beds A new out patient department has been completed and contains all modern requirements. Physicians Dr R J Rowlette and Dr M Davitt Surgeons Mr W Stoker, Mr L A Byrne, Mr J L Keegan, and Mr P Hayden Assistant Surgeon Mr T W Conway X Rayist Dr H W Mason Gynæcologist Dr McArdle Pathologist Mr E J McWeeney Throat and Nose Specialist Dr P J Keogh Dentist Mr A K Macdonald. Secretary Mr Kieran O'Dea

Mater Misericordiæ Hospital, Dublin—Physicians Sir Joseph Redmond, Dr John Murphy, and Dr Martin Dempsey Surgeons Sir Arthur Chance, Mr Alexander Blayney and Mr Denis Farnan Assistant Physicians Dr John O Donnell and Dr F H Callaghan Assistant Surgeons Mr H Barniville and Mr C McAuley Gynæcologist Dr Robert Farnan Ophthalmic Surgeon Mr Louis Werner Assistant Ophthalmic Surgeon Mr R Joyce Surgeon for Diseases of Throat and Nose Mr Patrick Dempsey Dental Surgeon Mr Ryan Pathologist Professor Edmond McWeeney X Rayist Mr Maurice Hayes Anæsthetist and Surgical Registrar Dr Patrick O'Farrell Assistant Pathologist Mr W D O Kelly This hospital, the largest in Ireland, containing 345 beds, is open at all hours for the reception of accidents and urgent cases Clinical instruction will be given by the Physicians and Surgeons at 9 A M daily A course of Clinical Instruction on Fever will be given during the winter and summer sessions A certificate of attendance upon this course, to meet the requirements of the licensing bodies, may be obtained. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary Surgical Operations will be performed daily Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents Instruction will be given on Pathology and Bacteriology Three House Physicians, eight House Surgeons, and 20 resident pupils will be elected annually Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff Leonard Prizes will be offered for competition annually For further particulars see prospectus Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom. A Private Hospital has been opened for the reception of Medical and Surgical cases A Training School and a Home for Trained Nurses have been opened in connexion with the Hospital

Terms of attendance—Nine months, £12 12*s*, six winter months, £8 8*s*, three summer months, £5 5*s* Entries can be made with any of the physicians or surgeons, or with the Registrar, Dr Martin Dempsey, 35, Merrion square A prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c , may be obtained from the Secretary, Medical Board.

MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY — Physicians Sir John William Moore, Dr Edward E Lennon, and Dr William Boxwell Surgeons Sir L H Ormsby, Mr William Taylor, Mr R. Lane Joynt, Dr Oliver St. J Gogarty, and Mr Henry Stokes Gynæcologist Dr F W Kidd Clinical Assistant Dr Mather Thomson Pathologist Dr Brontë House Surgeons Mr E V Tivy and Mr I S Barrett This hospital was founded in 1753 and now contains 166 beds available for clinical teaching A building containing 40 beds for the isolated treatment of fevers is attached to the hospital The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom Six Medical Clinical Clerks and 12 Surgical Resident Pupils and Dressers are appointed every six months, and House Surgeons and Clinical Assistants are elected annually A prospectus giving the complete arrangements for the coming session may be obtained from the Honorary Treasurer of the Medical Board, Sir L H Ormsby 92, Merrion square, Dublin.

MERCER'S HOSPITAL.—This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction There are special wards for the treatment and study of children's diseases During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements

Appointments —A House Surgeon is appointed annually There are Five Resident Pupils, and Clinical Clerks and Dressers are appointed monthly from amongst the most deserving members of the class Women students are admitted.

Fees —Winter, six months, £8 8*s* , Summer, three months, £5 5*s* , nine months £12 12*s*

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For further particulars apply to Dr Bethel Solomons Hon Sec., Medical Board 30, Lower Baggot-street, Dublin

NATIONAL MATERNITY HOSPITAL, Holles street, Dublin.—Established 1894 Masters Sir Andrew J Horne and Dr R J White The large number of cases at the hospital give great opportunities for practical work. Arrangements are made for post-graduate and special courses Certificates of attendance at the hospital are recognised by all the licensing bodies For further particulars apply to the Masters

RICHMOND, WHITWORTH, AND HARDWICKE HOSPITALS, North Brunswick street, Dublin —These hospitals contain 317 beds—130 for Surgical cases 70 for Medical cases, 77 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 40 beds for sick soldiers A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services 12 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced Students but also to those who are qualified in Medicine and Surgery The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee Women students are eligible for election as residents and special apartments are reserved for their use For prospectuses apply to Mr Adams McConnell F R C S I , Hon Secretary, 69, Fitzwilliam square, Dublin

ROTUNDA HOSPITAL, Dublin.*—This institution is the largest combined gynæcological and maternity hospital in the British Empire Women students can reside in the hospital on terms similar to those for men Master Dr Henry Jellett Assistants Dr Simpson and Dr Gilmor Pathologist Dr R J Rowlette For further particulars apply to the Master

ROYAL CITY OF DUBLIN HOSPITAL.—Founded 1832, enlarged 1851, rebuilt 1893 150 beds Consulting Physician Sir Hawtrey Benson Physicians Dr A R. Parsons and Dr T G Moorhead Surgeons Mr G J Johnston, Mr H Moore, and Mr R A Stoney Ophthalmic and Aural Surgeon Mr Frank C Crawley Gynæcologist Mr G Fitzgibbon Ear, Throat, and Nose Surgeon Dr T O Graham Anæsthetist Mr G P Meldon Dental Surgeon Mr D L Rogers Secretary Mr Edw B Armstrong

ROYAL VICTORIA EYE AND EAR HOSPITAL, Dublin —Established 1844 Incorporated 1897 102 beds Consulting Physician Dr R A Hayes. Consulting Dental Surgeon Mr A W W Baker Surgeons Mr J B Story, Mr Louis Werner, and Mr H C Mooney Assistant Surgeons Mr F C Crawley, Mr J C Cummins, Mr R H Mathews and Miss E Maxwell (on service in Malta) Clinical Assistant Miss Georgina Prosser Surgeon to Dispensary for Throat Dr T O Graham (on service in France) Surgical Radiographer Mr W S Haughton Registrar Mr G A. Howell Anæsthetists Dr J Beckett and Dr T A Watson In-patients, 1571, out-patients, 9363 Two house surgeons appointed annually

DR STEEVENS' HOSPITAL, Dublin —Established 1720 250 beds Consulting Physicians Dr J O'Carroll, Dr J Craig, and Dr J M Purser, Consulting Surgeon Sir Arthur Chance. Physicians Dr R. A Hayes, Dr T P C Kirkpatrick and Dr W A. Winter Assistant Physician Dr J J Purser Surgeons Mr R B McCausland, Mr W S Haughton Mr Arthur Chance, and Mr W C Stevenson Assistant Surgeon Dr W A. Cooke Anæsthetist Dr W H. Lowe. Obstetric Physician and Gynæcologist Dr E H. Tweedy Ophthalmic and Aural Surgeon Dr R H Mathews Pathologist Dr W M Crofton Dental Surgeon Mr G M P Murray Resident Surgeon Dr J A. Small X Rayist Dr H W Mason Assistant X Rayist Mr G E Pepper Scientific Adviser Mr John Joly, D Sc , F R S Assistant Dental Surgeon Mr H Hayes Secretary Mr R J Ogden Patients, 1581

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THE AUSTIN EDWARDS X RAY FILMS —We have tested the Austin Edwards X ray films and find them to have certain advantages over the more usual glass plates Apart from the inherent qualities of a light flexible and unbreakable support these are coated on both sides which not only prevents curling but gives a double thickness of deposit This means that much shorter exposures can be employed A further advantage is that several films can be developed at once, effecting a considerable saving of time in the dark room For all ordinary cases these films are very satisfactory and should be specially valuable in military work The fact remains, however that celluloid is not so transparent as well selected glass, and becomes less so when coated on both sides with gelatine consequently a film will always lack the brilliancy of a glass plate coated one side only Where it is essential to show fine and delicate detail as in certain bone diseases and pulmonary affections, the glass plate is still the best

Staff —Physicians Dr Wallace Beatty, Dr H Bewley, and Dr G Peacocke Surgeons Mr T E Gordon, Mr L G Gunn, and Mr W Pearson Obstetric Surgeon Sir W J Smyly Ophthalmic Surgeon Mr J B Story Throat Surgeon Dr S Horace Law Pathologist Dr A Stokes Assistant Physician Dr W G Harvey Anæsthetist Dr Piel

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Further information will be supplied by the Hon. Secretary to the Medical Board, Dr H C Drury

JERVIS STREET HOSPITAL, Dublin —Founded 1718 , rebuilt 1886 130 beds A new out-patient department has been completed and contains all modern requirements. Physicians Dr R J Rowlette and Dr M Davitt Surgeons Mr W Stoker, Mr L A Byrne, Mr J L Keegan, and Mr P Hayden Assistant Surgeon Mr T W Conway X Rayist Dr H W Mason Gynæcologist Dr McArdle. Pathologist Mr E J McWeeney Throat and Nose Specialist Dr P J Keogh Dentist Mr A. K. Macdonald. Secretary Mr Kieran O'Dea.

MATER MISERICORDIÆ HOSPITAL Dublin —Physicians Sir Joseph Redmond, Dr John Murphy, and Dr Martin Dempsey Surgeons Sir Arthur Chance, Mr Alexander Blayney and Mr Denis Farnan Assistant Physicians Dr John O Donnell and Dr F H Callaghan Assistant Surgeons Mr H Barniville and Mr C McAuley Gynæcologist Dr Robert Farnan Ophthalmic Surgeon Mr Louis Werner Assistant Ophthalmic Surgeon Mr R Joyce Surgeon for Diseases of Throat and Nose Mr Patrick Dempsey Dental Surgeon Mr Ryan Pathologist Professor Edmond McWeeney X Rayist Mr Maurice Hayes Anæsthetist and Surgical Registrar Dr Patrick O'Farrell Assistant Pathologist Mr W D O Kelly This hospital, the largest in Ireland, containing 345 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction will be given by the Physicians and Surgeons at 9 A M daily A course of Clinical Instruction on Fever will be given during the winter and summer sessions A certificate of attendance upon this course, to meet the requirements of the licensing bodies, may be obtained. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary Surgical Operations will be performed daily Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents Instruction will be given on Pathology and Bacteriology Three House Physicians, eight House Surgeons, and 20 resident pupils will be elected annually Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff Leonard Prizes will be offered for competition annually For further particulars see prospectus Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom A Private Hospital has been opened for the reception of Medical and Surgical cases A Training School and a Home for Trained Nurses have been opened in connexion with the Hospital.

Terms of attendance —Nine months, £12 12*s* , six winter months, £8 8*s* , three summer months, £5 5*s* Entries can be made with any of the physicians or surgeons, or with the Registrar, Dr Martin Dempsey, 35, Merrion square A

prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c , may be obtained from the Secretary, Medical Board

Meath Hospital and County Dublin Infirmary — Physicians Sir John William Moore, Dr Edward E Lennon, and Dr William Boxwell Surgeons Sir L H Ormsby, Mr William Taylor, Mr R Lane Joynt, Dr Oliver St. J Gogarty, and Mr Henry Stokes Gynæcologist Dr F W Kidd Clinical Assistant Dr Mather Thomson Pathologist Dr Brontë House Surgeons Mr E V Tivy and Mr I S Barrett This hospital was founded in 1753 and now contains 166 beds available for clinical teaching A building containing 40 beds for the isolated treatment of fevers is attached to the hospital The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom Six Medical Clinical Clerks and 12 Surgical Resident Pupils and Dressers are appointed every six months, and House Surgeons and Clinical Assistants are elected annually A prospectus giving the complete arrangements for the coming session may be obtained from the Honorary Treasurer of the Medical Board Sir L H Ormsby, 92, Merrion square, Dublin

Mercer's Hospital —This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction There are special wards for the treatment and study of children's diseases During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements

Appointments —A House Surgeon is appointed annually There are Five Resident Pupils, and Clinical Clerks and Dressers are appointed monthly from amongst the most deserving members of the class Women students are admitted.

Fees —Winter, six months, £8 8*s* , Summer, three months, £5 5*s* , nine months, £12 12*s*

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For further particulars apply to Dr Bethel Solomons Hon Sec , Medical Board 30, Lower Baggot-street, Dublin.

National Maternity Hospital, Holles-street, Dublin — Established 1894 Masters Sir Andrew J Horne and Dr R J White The large number of cases at the hospital give great opportunities for practical work. Arrangements are made for post-graduate and special courses Certificates of attendance at the hospital are recognised by all the licensing bodies For further particulars apply to the Masters

Richmond Whitworth, and Hardwicke Hospitals, North Brunswick street, Dublin —These hospitals contain 317 beds—130 for Surgical cases, 70 for Medical cases, 77 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 40 beds for sick soldiers A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services 12 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced Students but also to those who are qualified in Medicine and Surgery The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee Women students are eligible for election as residents and special apartments are reserved for their use For prospectuses apply to Mr Adams McConnell F R C S I , Hon Secretary, 69, Fitzwilliam square, Dublin

Rotunda Hospital, Dublin.*—This institution is the largest combined gynæcological and maternity hospital in the British Empire Women students can reside in the hospital on terms similar to those for men Master Dr Henry Jellett Assistants Dr Simpson and Dr Gilmor Pathologist Dr R J Rowlette For further particulars apply to the Master

Royal City of Dublin Hospital.—Founded 1832, enlarged 1851, rebuilt 1893 150 beds Consulting Physician Sir Hawtrey Benson Physicians Dr A R Parsons and Dr T G Moorhead Surgeons Mr G J Johnston, Mr H Moore, and Mr R A. Stoney Ophthalmic and Aural Surgeon Mr Frank C Crawley Gynæcologist Mr G Fitzgibbon Ear, Throat, and Nose Surgeon Dr T O Graham Anæsthetist Mr G P Meldon Dental Surgeon Mr D L Rogers Secretary Mr Edw B Armstrong

Royal Victoria Eye and Ear Hospital, Dublin — Established 1844 Incorporated 1897 102 beds Consulting Physician Dr R A Hayes. Consulting Dental Surgeon Mr A. W W Baker Surgeons Mr J B Story, Mr Louis Werner, and Mr H C Mooney Assistant Surgeons Mr F C Crawley, Mr J O Cummins Mr R H Mathews and Miss E Maxwell (on service in Malta) Clinical Assistant Miss Georgina Prosser Surgeon to Dispensary for Throat Dr T O Graham (on service in France) Surgical Radiographer Mr W S Haughton Registrar Mr G A Howell Anæsthetists Dr J Beckett and Dr T A Watson In-patients, 1571, out-patients, 9363 Two house surgeons appointed annually

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St Vincent's Hospital and Dispensary Dublin *— Established 1834 160 beds Physicians and Lecturers on Medicine Dr M F Cox, Dr W J Dargan, and Dr Meenan Physician for Extern Department Dr Magennis Surgeons and Lecturers on Surgery Mr J S McArdle, Mr R F Tobin, and Mr D J Kennedy Surgeon to Extern Department Mr H Meade Gynæcologist and Lecturer on Gynæcology Mr A J Smith Pathologist and Lecturer on Pathology Dr T T O'Farrell. Surgeon Dentist and Lecturer on Dentistry Mr J J Murphy Pharmacist and Lecturer on Pharmacy R. Shaw

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Hudson Scholarship —In addition to the junior prizes the Hudson Scholarship, £30 and a gold medal, as well as a prize of £10, together with a silver medal, will be awarded at the end of the session for proficiency in medicine, surgery, gynæcology, and pathology

The certificates of attendance are recognised by all the *Universities* and licensing *bodies in the United Kingdom* Further particulars may be obtained from Dr H Bewley

COOMBE LYING IN HOSPITAL AND GUINNESS DISPENSARY *FOR THE TREATMENT OF DISEASES PECULIAR TO WOMEN*, Dublin.—This hospital contains nearly 70 beds and consists of two divisions, one of which is devoted to lying in cases and the other to the treatment of diseases peculiar to women The practice of this hospital is one of the largest in Ireland Lectures are delivered, practical instruction given, and gynæcological operations are performed in the theatres daily There is a general dispensary held daily, at which instruction is given on the Diseases of Women and Children There is a special afternoon dispensary held by the Master and his assistants, at which practical instruction in gynæcology is given There is no extra charge for attendance at this dispensary There is accommodation for intern pupils who enjoy exceptional advantages of acquiring a thorough knowledge of this branch of their profession Lady medical students can reside in the hospital The residents' quarters are comfortable Clinical assistants are appointed from amongst the pupils as vacancies occur *Certificates of attendance at this hospital* are accepted by all *licensing* bodies *Fees* Extern pupils for full course of six months, £8 8*s* , three months, £4 4*s* Intern pupils, one month, £4 4*s* , each consecutive month, £3 3*s* , six months, £18 18*s* , board and *lodging* in the hospital, 21*s* per week Lady students intern, one month, £4 4*s* , each consecutive month, £3 3*s* Registration fee, in advance, 10*s* 6*d* Students can enter for attendance at any time, but preference is given to those entering from the first day of the month Further particulars may be had on application to the Master or the Registrar at the hospital

Staff —Master Dr R A MacLaverty Assistant Masters Dr D O Morris and Dr Loy Registrar Fred A Heney Consulting Physicians Sir John W Moore and Sir J M Redmond Consulting Surgeons Dr F W Kidd Dr M J Gibson, and Dr W Taylor Pathologist Dr E J McWeeney Pathological Analyst Sir C A. Cameron

SIR PATRICK DUN'S HOSPITAL, Grand Canal street Dublin —Classes both in Medicine and Surgery are held each morning from 9 o'clock from Oct 1st till the end of June Special classes for junior students will be held in the wards during the months of October, November, and December. The surgical operating theatre is thoroughly *in accord* with modern surgical requirements Instruction in the Diseases of Women is given on Tuesdays and Fridays at 10 A M There is a special wing devoted to fever cases Pathological and Bacteriological Demonstrations will be given on Fridays at 10 30 A.M , when there is suitable material, A department for the special treatment of Throat, Nose and Ear Diseases is under the direction of Sir Robert H Woods *Instruction* will be given in these subjects and in the use of the Laryngoscope and Otoscope to senior students on Mondays and Thursdays Practical instruction is given in anæsthetics to *senior students Practical* demonstrations are given in Dentistry on Wednesdays and Saturdays Opportunities are given the members of the hospital class of seeing the various applications of the X rays to the diagnosis and treatment of injury and disease Opportunities are also afforded in the out-patient department for the diagnosis and treatment of the numerous minor ailments *not met* with in the hospital wards A Resident Surgeon, with salary, is appointed annually Six Resident Pupils are appointed each half year Six Surgical Dressers and six Clinical Clerks are appointed each month There are facilities for women students

Prizes and Medals —Clinical medals and prizes amounting to about £15 each will be awarded in Medicine and in Surgery respectively in accordance with the will of the late Rev Samuel Haughton, M D , S F T C D Candidates who fail *to obtain these medals and prizes will* be awarded special certificates in Medicine and in Surgery provided they show sufficient merit.

Fees —Winter and summer session, £12 12*s* , winter session (six months), £8 8*s* , and summer session (three months), £5 5*s* Special certificate in anæsthetics, £1 1*s* The practice of this hospital is open to all students, and the certificates are recognised by Dublin University the National University and Royal Colleges of Surgeons of England, Ireland, and Scotland

Consulting Physicians Dr J M Purser and Dr J Magee Finny *Physicians Professor* W G Smith, Dr H C Drury, Professor James Craig, and Professor T Henry Wilson. Assistant Physician Dr E J Watson Surgeons Professor E H Taylor, Sir C A K Ball, Bart., and Dr C M. Benson Pathologist Professor A. C O Sullivan. Department for Throat, Nose, and Ear Professor Sir Robert H. Woods X Ray Department Dr E J Watson Anæsthetist Dr W C P *Smyly Dentist* Mr J I. Kelly House Surgeon (Vacant)

Further information will be supplied by the Hon. Secretary to the Medical Board, Dr H C Drury

JERVIS STREET HOSPITAL, Dublin.—Founded 1718 , rebuilt 1886 130 beds A new out-patient department has been completed and contains all modern requirements. Physicians *Dr R J Rowlette* and *Dr M Davitt* Surgeons Mr W Stoker, Mr L A Byrne, Mr J L Keegan, and Mr P Hayden Assistant Surgeon Mr T W Conway X Rayist Dr H W Mason Gynæcologist Dr McArdle. Pathologist Mr E J McWeeney Throat and Nose Specialist Dr P J Keogh Dentist Mr A. K Macdonald. Secretary Mr Kieran O Dea

MATER MISERICORDIÆ HOSPITAL *Dublin* —Physicians *Sir Joseph Redmond, Dr John Murphy,* and *Dr* Martin Dempsey Surgeons Sir Arthur Chance, Mr Alexander Blayney and Mr Denis Farnan Assistant Physicians Dr John O Donnell and Dr F H Callaghan Assistant Surgeons Mr H Barniville and Mr C McAuley Gynæcologist Dr Robert Farnan Ophthalmic Surgeon Mr Louis Werner Assistant Ophthalmic Surgeon Mr R Joyce Surgeon for Diseases of Throat and Nose Mr Patrick Dempsey Dental Surgeon Mr Ryan Pathologist Professor Edmond McWeeney X Rayist Mr Maurice Hayes Anæsthetist and Surgical *Registrar Dr Patrick O Farrell* Assistant Pathologist Mr W D O Kelly This hospital, the largest in Ireland, containing 345 beds, is open at all hours for the reception of accidents and urgent cases. Clinical instruction will be given by the Physicians and Surgeons at 9 A M daily A course of Clinical Instruction on Fever will be given during the winter and summer sessions A certificate of attendance upon this course, to meet the requirements of the licensing bodies, may be obtained. Ophthalmic Surgery will be taught in the Special Wards and in the Dispensary Surgical Operations will be performed daily Connected with the hospital are extensive Dispensaries, which afford valuable opportunities for the study of general Medical and Surgical Diseases, and Accidents Instruction will be given on Pathology and Bacteriology Three House Physicians, eight House Surgeons, and 20 resident pupils will be elected annually Dressers and Clinical Clerks will also be appointed, and certificates will be given to those who perform their duties to the satisfaction of the staff Leonard Prizes will be offered for competition annually *For* further particulars see prospectus Certificates of attendance upon this hospital are recognised by all the Universities and licensing bodies in the United Kingdom *A Private* Hospital has been opened for the reception of Medical and Surgical cases A Training School and a Home for Trained Nurses have been *opened* in connexion with the Hospital.

Terms of attendance —Nine months, £12 12*s* , six winter months, £8 8*s* , three summer months, £5 5*s* Entries can be made with any of the *physicians or surgeons*, or with the Registrar, Dr Martin Dempsey, 35, Merrion square. A

prospectus containing in detail the arrangements for Clinical Instruction, Prizes, &c., may be obtained from the Secretary, Medical Board

MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY — Physicians Sir John William Moore, Dr Edward E Lennon, and Dr William Boxwell Surgeons Sir L H Ormsby, Mr William Taylor, Mr R. Lane Joynt, Dr Oliver St. J Gogarty, and Mr Henry Stokes Gynæcologist Dr F W Kidd Clinical Assistant Dr Mather Thomson Pathologist Dr Brontë House Surgeons Mr E V Tivy and Mr I S Barrett This hospital was founded in 1753 and now contains 166 beds available for clinical teaching A building containing 40 beds for the isolated treatment of fevers is attached to the hospital The certificates of this hospital are recognised by all the universities and licensing bodies of the United Kingdom Six Medical Clinical Clerks and 12 Surgical Resident Pupils and Dressers are appointed every six months, and House Surgeons and Clinical Assistants are elected annually A prospectus giving the complete arrangements for the coming session may be obtained from the Honorary Treasurer of the Medical Board Sir L H Ormsby, 92, Merrion square, Dublin

MERCER'S HOSPITAL.—This hospital, founded in 1734, is situated in the centre of Dublin, in the immediate vicinity of the Schools of Surgery of the Royal College of Surgeons, the Catholic University School of Medicine, and within five minutes' walk of Trinity College. It contains 120 beds for medical and surgical cases, and arrangements have been made with the medical officers of Cork street Fever Hospital whereby all students of this hospital are entitled to attend the clinical instruction of that institution and become eligible for the posts of Resident Pupil, &c. There is a large dispensary for out-patients. Students of the hospital are permitted to attend the gynæcological department, where they receive practical instruction There are special wards for the treatment and study of children's diseases During the past few years the hospital has undergone extensive alterations in order to bring it up to modern requirements

Appointments —A House Surgeon is appointed annually There are Five Resident Pupils, and Clinical Clerks and Dressers are appointed monthly from amongst the most deserving members of the class Women students are admitted.

Fees —Winter, six months, £8 8*s* , Summer, three months, £5 5*s* , nine months, £12 12*s*

Consulting Physician Dr J Magee Finny Consulting Surgeon (Vacant) Consulting Gynæcologist Dr J H Glenn. Consulting Ophthalmic Surgeon Mr J B Story Physicians Dr J Lumsden and Dr F Purser Surgeons Mr R C B Maunsell, Mr S S Pringle and Mr W Ireland de C Wheeler Gynæcologist Dr Bethel Solomons Radiologist Dr T G Hardman. Pathologist Dr J T Wigham Anæsthetist Dr J Beckett Dentist J Cockburn, L D S

For further particulars apply to Dr Bethel Solomons Hon Sec., Medical Board 30, Lower Baggot-street, Dublin.

NATIONAL MATERNITY HOSPITAL, Holles street, Dublin — Established 1894 Masters Sir Andrew J Horne and Dr R. J White The large number of cases at the hospital give great opportunities for practical work. Arrangements are made for post-graduate and special courses Certificates of attendance at the hospital are recognised by all the licensing bodies For further particulars apply to the Masters

RICHMOND WHITWORTH, AND HARDWICKE HOSPITALS, North Brunswick street, Dublin —These hospitals contain 317 beds—130 for Surgical cases 70 for Medical cases, 77 for Fever and other Epidemic Diseases, and an Auxiliary Wing of 40 beds for sick soldiers A Resident Physician and a Resident Surgeon are appointed each half year and are paid for their services 12 Resident Clinical Clerks are appointed each quarter and provided with furnished apartments, fuel, &c. These appointments are open not only to advanced Students but also to those who are qualified in Medicine and Surgery The Dressers are selected from among the best qualified of the pupils without the payment of any additional fee Women students are eligible for election as residents and special apartments are reserved for their use For prospectuses apply to Mr Adams McConnell F R C S I, Hon Secretary, 69 Fitzwilliam square, Dublin

ROTUNDA HOSPITAL, Dublin.*—This institution is the largest combined gynæcological and maternity hospital in the British Empire Women students can reside in the hospital on terms similar to those for men Master Dr Henry Jellett Assistants Dr Simpson and Dr Gilmor Pathologist Dr R J Rowlette For further particulars apply to the Master

ROYAL CITY OF DUBLIN HOSPITAL —Founded 1832, enlarged 1851, rebuilt 1893 150 beds Consulting Physician Sir Hawtrey Benson Physicians Dr A R. Parsons and Dr T G Moorhead Surgeons Mr G J Johnston, Mr H Moore, and Mr R A Stoney Ophthalmic and Aural Surgeon Mr Frank C Crawley Gynæcologist Mr G Fitzgibbon Ear, Throat, and Nose Surgeon Dr T O Graham Anæsthetist Mr G P Meldon Dental Surgeon Mr D L Rogers Secretary Mr Edw B Armstrong

ROYAL VICTORIA EYE AND EAR HOSPITAL, Dublin — Established 1844 Incorporated 1897 102 beds Consulting Physician Dr R A Hayes Consulting Dental Surgeon Mr A. W W Baker Surgeons Mr J B Story, Mr Louis Werner, and Mr H C Mooney Assistant Surgeons Mr F C Crawley, Mr J O Cummins Mr R H Mathews and Miss E Maxwell (on service in Malta) Clinical Assistant Miss Georgina Prosser Surgeon to Dispensary for Throat Dr T O Graham (on service in France) Surgical Radiographer Mr W S Haughton Registrar Mr G A. Howell Anæsthetists Dr J Beckett and Dr T A Watson Inpatients, 1571, out patients, 9363 Two house surgeons appointed annually

DR STEEVENS' HOSPITAL, Dublin —Established 1720 250 beds Consulting Physicians Dr J O'Carroll, Dr J Craig, and Dr J M Purser, Consulting Surgeon Sir Arthur Chance Physicians Dr R. A Hayes, Dr T P C Kirkpatrick, and Dr W A. Winter Assistant Physician Dr J J Purser Surgeons Mr R B McCausland, Mr W S. Haughton Mr Arthur Chance, and Mr W C Stevenson Assistant Surgeon Dr W A. Cooke Anæsthetist Dr W H Lowe Obstetric Physician and Gynæcologist Dr E H. Tweedy Ophthalmic and Aural Surgeon Dr R H Mathews Pathologist Dr W M Crofton Dental Surgeon Mr G M P Murray Resident Surgeon Dr J A. Small X Rayist Dr H W Mason Assistant X Rayist Mr G E Pepper Scientific Adviser Mr John Joly, D Sc, F R.S Assistant Dental Surgeon Mr H. Hayes Secretary Mr R J Ogden Patients, 1581

ST VINCENT'S HOSPITAL AND DISPENSARY Dublin *— Established 1834 160 beds Physicians and Lecturers on Medicine Dr M F Cox, Dr W J Dargan, and Dr Meenan Physician for Extern Department Dr Magennis Surgeons and Lecturers on Surgery Mr J S McArdle, Mr R F Tobin, and Mr D J Kennedy Surgeon to Extern Department Mr H Meade Gynæcologist and Lecturer on Gynæcology Mr A J Smith Pathologist and Lecturer on Pathology Dr T T O Farrell Surgeon-Dentist and Lecturer on Dentistry Mr J J Murphy Pharmacist and Lecturer on Pharmacy R Shaw

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* No returns

THE Wellcome Historical Medical Museum, 34A, Wigmore-street, London, W will be closed for cleaning from Sept 1st to the 30th inclusive

THE AUSTIN EDWARDS X RAY FILMS —We have tested the Austin Edwards X ray films and find them to have certain advantages over the more usual glass plates Apart from the inherent qualities of a light flexible and unbreakable support these are coated on both sides, which not only prevents curling but gives a double thickness of deposit This means that much shorter exposures can be employed A further advantage is that several films can be developed at once, effecting a considerable saving of time in the dark room For all ordinary cases these films are very satisfactory and should be specially valuable in military work The fact remains however, that celluloid is not so transparent as well selected glass, and becomes less so when coated on both sides with gelatine consequently a film will always lack the brilliancy of a glass plate coated one side only Where it is essential to show fine and delicate detail as in certain bone diseases and pulmonary affections, the glass plate is still the best

THE COLONIAL MEDICAL SERVICE

IN the self governing dominions Canada, Australia, New Zealand, the Union of South Africa, and Newfoundland, medical appointments are made concerning which information can be obtained from the High Commissioners or Agents General in London, appointments in Egypt and the Soudan are regulated from the Foreign Office, in Aden and adjacent territories the appointments are under the control of the Government of Bombay, in Rhodesia the appointments are made by the British South Africa Company, London Wall Buildings, E C, in North Borneo application should be made to the British North Borneo Company, 37, Threadneedle street, E C, for appointments, and those in Sarawak are in the hands of H H the Rajah

But in addition to all these there are a large number of important posts under the patronage of the Secretary of State for the Colonies These concern East Africa (the East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar Protectorates), Eastern (Ceylon, the Straits Settlements, and Federated Malay States, Hong Kong, Weihaiwei, Mauritius, and Seychelles), West India (British Guiana, Jamaica, Trinidad, the Windward Islands, the Leeward Islands, Barbados, British Honduras, and the Bahamas), Fiji and the Western Pacific, Cyprus, Malta, Gibraltar, St Helena, Bermuda, and the Falkland Islands, and West Africa (Nigeria, the Gold Coast, Sierra Leone, and the Gambia) As a general rule, each Colony or Protectorate has its own public service distinct from that of every other, and it is usually only the higher officers who are transferred by the Secretary of State from one Colony to another, but there are two exceptions to this rule The West African Medical Staff, which serves Nigeria, the Gold Coast, Sierra Leone, and the Gambia, form one service, and in practice the medical services of the Straits Settlements and the Federated Malay States may be regarded as one, as the officers may be and frequently are transferred from the Colony to the States, or *vice versa* In Ceylon, Mauritius, Jamaica, Barbados, the Bahamas, and Bermuda vacancies are almost always filled locally by the appointment of qualified native candidates, or—in the case of some of the higher posts—by transfer from other Colonies Appointments in Malta are all filled locally Vacancies in the Hong Kong Medical Department are generally filled by transfer from other Colonies In most cases the duties of a colonial medical officer are of a very general character, including medical, surgical, and often public health work It is only occasionally that a specialist is required All applicants must be between the ages of 23 and 35, but in the case of East Africa, Uganda, Nyasaland, Somaliland, and Zanzibar preference will be given to candidates who are over 25 years of age, while in the case of Fiji and the Western Pacific preference will be given to candidates who are under 30 Candidates must be doubly qualified, and the choice will usually fall, other things being equal, on those who have held hospital appointments

East African Protectorates—Medical Officers in the East Africa Uganda Nyasaland Somaliland and Zanzibar Protectorates are appointed on probation in the first instance for three years at the end of which period their appointments are made permanent if their service has been satisfactory but special arrangements are now in force in Uganda. The salary of a Medical Officer during probation is £400 per annum fixed but as soon as he has been confirmed in the permanent appointment his salary rises by annual increments of £20 to £500 per annum There are 17 appointments of this nature in the East Africa Protectorate 18 in Uganda 11 in Nyasaland 5 in Zanzibar and 3 in Somaliland In the East Africa Protectorate there are certain special appointments—viz Deputy Principal Medical Officer (£600–25–700 and £60 duty allowance) Bacteriologist (£600–25–700) Assistant Pathologist and Assistant Bacteriologist (£400) Two Senior Medical Officers (£500–25–600 with £50 duty allowance) Analyst (£400–20–450) Chief Sanitation Officer (£600–25–700 and £60 duty allowance), and Three Medical Officers of Health (one at £500–25–600 with £50 duty allowance and two at £400–20–500 with £40 duty allowance) In Uganda there is a Deputy Principal Medical Officer (£500–25–600 and £50 duty allowance) a Bacteriologist (£500 and £50 duty allowance), a Sanitary Officer (£500–25–600 and £50 duty allowance) and Two Senior Medical Officers with the same emoluments. The salary attached to the appointment of Principal Medical Officer in the East Africa Protectorate and in Uganda is £750 per annum rising to £850 per annum by annual increments of £25 and £600 per annum rising to £700 per annum by annual increments of £25 in the case of Nyasaland Medical Officers are permitted to take private practice on the understanding that they give precedence to their official duties There are also at present in Uganda certain temporary Medical Officers whose appointments (at a salary of £400 a year) have been created in order to cope with the work in connexion with special measures to control sleeping sickness,
ereal disease and plague A candidate for the Uganda service will
ral be offered one of these temporary appointments in the first
nd will be considered for absorption, if he wishe
opportunity occurs provided that his service is approved. Temporary Medical Officers are engaged for three years and free passages are provided If a temporary Medical Officer is subsequently appointed to the permanent staff of the Protectorate in which he has been employed on a temporary footing his temporary service will ultimately be reckoned for pension.

Straits Settlements[1]—Medical Officers are appointed as House Surgeons or Assistant Health Officers at a salary of £350 After one year's satisfactory service House Surgeons are appointed Medical Officers with salary rising from £400 to £600. Above this class there are nine senior appointments carrying salaries ranging from £600 (rising to £720) to £750 (rising to £900) The Principal Civil Medical Officer receives £1050, rising to £1200 Duty allowances are attached to all appointments and free quarters or an additional allowance in lieu thereof are given to House Surgeons The authorised establishment is at present 32 officers

Federated Malay States[1]—Appointments are graded as follows:—Principal Medical Officer, £1050 to £1200 Senior Medical Officer Perak £750 rising to £900 Senior Medical Officer Selangor, £800, rising to £1000 seven Medical Officers Grade I £600 by £20 annually to £720 18 Medical Officers, Grade II £350 and after one year's satisfactory service £400 rising to £600 with free furnished quarters, without private practice A Medical Officer is attached to the Regiment of Malay States Guides his salary being £360 to £480 The Senior Medical Officers in Perak and Selangor and the two Grade I. Medical Officers in charge of Negri Sembilan and Pahang are allowed consulting practice only Other Medical Officers are prohibited from private practice except in very special cases where the Chief Secretary is satisfied that, owing to the absence of private practitioners, it is absolutely necessary to allow the Government Medical Officer to attend to private patients The posts of Medical
Federated Malay States and the correspond
Straits Settlements are filled by the promot
entered the service as House Surgeons. A n
varying with the appointment, is attached to
Straits Settlements and Federated Malay State
Surgeons the allowance is at the rate of £40 a y

Seychelles—There are four medical appointme
Medical Officer receives Rs 4500 The Assistan
Officers receive Rs.3000 The holders of these la
free quarters Private practice is allowed

Weihaiwei—There are two non pensionable Medi
rising to £400 with free quarters

British Guiana—There are 38 appointments Candi
held for at least six months a resident medical appoi
public institution Officers are appointed on two ye
assistant medical officers and are paid a salary at the
annum with quarters without the right to private prac
manent staff to which officers may be appointed at
of the probationary period includes the following
Surgeon General £900 with travelling expenses and cor
tice Health Officer Georgetown £800 two Medical Off
to £700, 12 Medical Officers at £500 to £600 16 Medic
£400 to £500 and five Medical Officers at £300 to £400
Officers on the completion of two years service in the fix
automatically rise to the £300–£400 class Medical office
to districts receive travelling allowances varying with the n
district They are also allowed private practice Medic
attached to public institutions are, in general allowed free q
deduction of 4 per cent is made from their salaries for th
of the premiums on an insurance of the officer's life for th
the widow or orphans

Trinidad and Tobago—In Trinidad and Tobago there a
appointments Officers are appointed in the first instanc
years probation as supernumeraries and are eligible for ap
as Government Medical Officers at the end of this period
must be unmarried and must remain unmarried whilst supern
Medical Officers Supernumeraries receive a salary of £250 pe
with furnished quarters and are usually attached to the Go
hospital Government Medical Officers receive salary at th
£250 per annum with quinquennial increments of £50 accru
the date of first appointment as supernumerary Medi l Office
are employed as District Medical Officers with priva
residence or a rent allowance of £50 a horse allowance and
cases other allowances for institution work. All officers are req
contribute 4 per cent. of their salaries towards the pensions
widows and orphans of public officers

Windward Islands (Grenada St. Lucia, St. Vincent)—The appointments are with few exceptions district appointments with the right to private practice attached, the salaries paid by Government vary from £250 to £350 with allowances in certain cases. The Governor has the power to transfer a medical officer from one island to another at his discretion The appointments are pensionable.

Leeward Islands (Antigua St. Christopher and Nevis Dominica, Montserrat, Virgin Islands)—The 24 appointments are of the same nature as in the Windward Islands but are not pensionable An officer when first sent out is not appointed to a particular island but to the service of the Leeward Islands, with a salary of £250, and the Governor decides as to the district which is to be allotted to him. In certain districts he may be required to perform magisterial duties. The medical officers receive fees for successful vaccinations post-mortem examinations attendance and giving evidence at courts of justice, certificates of lunacy and in the larger islands, for burial certificates. They are also as a rule, allowed private practice.

British Honduras—There are seven medical appointments (besides the principal post of Colonial Surgeon) each carrying a salary of $170
per annum Unless they already possess a Diploma of Public Health, medical officers are liable to be required before they join the colony to undergo a course of instructi at a laboratory of public health or
analogous itution The about 4s 2d

Fiji estern I Fiji the Government Medical
Officer lary of annual increments of £25 to
£500 nished use allowance of £50 Is
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salary to £6 They are allowed
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private practice, so far as is consistent with the proper discharge of their duty to the Government, but in most districts the private practice is very small. They are required either to take charge of hospitals or of districts, at the discretion of the authorities. The posts are pensionable. There are at present 15 Medical Officers, in addition to a Chief Medical Officer (£700 a year rising to £800) The medical services of Fiji and the Western Pacific are interchangeable. While serving in the Western Pacific Protectorates their duties may be of a quasi-magisterial nature and they draw an extra non pensionable allowance of £50 per annum

Cyprus—There is a Chief Medical Officer paid at the rate of £500 per annum and three District Medical Officers paid at the rate of £275 per annum all enjoying private practice (except the Chief Medical Officer who is allowed consulting practice only) and receiving 2s per diem forage allowance these are the only medical appointments in the island which are open to English candidates

Gibraltar—There is a surgeon of the Colonial Hospital receiving £400 with fuel and light allowances and private practice He also receives £50 for medical examination of school children There are also two Assistant Surgeons with a salary of £350 per annum who are allowed private consulting practice only Free quarters unfurnished, are provided for all three officers

St Helena—The Colonial Surgeon at present receives £270 per annum and £27 horse allowance. Private practice is allowed

Falkland Islands—There are two appointments The Colonial Surgeon is paid at the rate of £350 per annum, with £25 as Health Officer The Assistant Colonial Surgeon is paid at the rate of £400 per annum without quarters Part of the salary is provided from private sources Private practice is allowed to the Colonial Surgeon and to a lesser extent to the Assistant Colonial Surgeon

Leave and Passages—In the East African Protectorates leave of abs full salary is granted in the normal case after a tour of ot less than 20 nor more than 30 months) to an each completed month of residence (or 2½ days officer is not returning to East Africa) exclusive oyages to and fro Officers serving in Uganda, stations in the East Africa and Nyasaland Pro- six or three days leave respectively in respect ervice In Somaliland special leave regulations for an officer taking leave approximately every as passages are provided for the officer only In a two months leave of absence with full salary may spect of each year's service, and this leave may be p to a maximum of eight months. Additional leave ay be granted on special grounds If an officer on the first leave is in receipt of a pensionable salary of less year he is granted a free return passage to the United In Hong Kong leave of absence on half salary may be r 4½ years service, and a portion of such leave may be if the Governor agrees, for half the amount on full pay ence in excess of 10 months at a time will not be granted but n may be allowed for ill health or very urgent private affairs o the necessities of the service, leave of absence on half be granted to officers in other Colonies outside tropical a period of six years resident service without any special Officers of the Fiji and Western Pacific service proposing to ir leave in Europe may receive a grant in aid of passage of £60 Leave may be given before the expiration of the due case of serious indisposition, or of urgent private affairs. In ce of special grounds the leave must not exceed one-sixth of r's resident service on special grounds it may exceed that six months In addition to the above vacation leave on may be granted if no inconvenience or expense is caused not exceeding three months in any two years. In the case of the Western Pacific and the Falkland Islands, 4½ months y be granted in any three years

t appointment an officer whose salary and fees together do not 500 a year will, except in the case of a few Colonies possessing ntative Assemblies be provided by the Crown Agents for the with free passages to the Colony for himself and his wife dren if any not exceeding four persons besides himself The appointed will be required to execute an agreement binding repay the cost of the passage or passages so obtained in the his leaving the Government service within three years This plies also to officers appointed to the Malay Peninsula and Hong Kong An officer taking leave out of the Colony has to provide his own passages

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MERCER'S HOSPITAL
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Pensions—Officers on the pensionable establishment in the East African Protectorates are at liberty to retire on attaining the age of 50 years. Earlier retirement in the event of ill-health is also provided for Pensions are computed on the scale of one-sixtieth of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement but for purposes of calculating pensions two years service is reckoned as service for three years In most of the other Colonies an officer holding a pensionable appointment may be allowed in the case of ill health to retire on a pension after ten full years resident service otherwise he must have attained the age of 55. For ten full years resident service fifteen sixtieths of the average annual salary of the retiring officer's fixed appointments for three years prior to retirement may be awarded, to which one-sixtieth may be added for each additional year's service but no addition will be made in respect of any service beyond 35 years For pension purposes absence on vacation leave counts as full service and leave on half pay as half service. In a few cases the retiring age is 60, and the pension after ten years service is ten sixtieths instead of fifteen

West African Medical Staff

The medical services of the West African Colonies and Protectorates—namely the Gambia, Sierra Leone the Gold Coast (including Ashanti and the Northern Territories) and Nigeria—form one service under the above name All the medical officers for the service are selected by the Secretary of State for the Colonies and are on one list for employment and promotion. As in other Colonies applicants must be between 23 and 35 years of age and possess a double qualification but preference is given to those over 25 and the unmarried. The higher grades are usually filled by promotion from the lower

The grades and emoluments of officers of the staff are as follows:—

Director of the Medical and Sanitary Service: This post exists in Nigeria only The salary attached to it is £1500 a year with a duty allowance at the rate of £250 a year

A duty allowance is payable to the holder of the appointment to which it is attached only while he is actually performing its duties, and during his absence or incapacity it is paid at the discretion of the Governor to the officer performing them for the time being A duty allowance is not a pensionable emolument.

Principal Medical Officer The Principal Medical Officers receive salary as follows: In Nigeria (Southern Provinces) £1200 a year with a duty allowance at the rate of £240 a year In Nigeria (Northern Provinces) £1100 a year with a duty allowance at the rate of £220 a year In the Gold Coast £1200 a year with a duty allowance at the rate of £240 a year In Sierra Leone £1000 a year with a duty allowance at the rate of £200 a year There is no Principal Medical Officer in the Gambia.

Deputy Principal Medical Officer There are four appointments of this grade three in Nigeria and one in the Gold Coast Salary at the rate of £900 a year rising by annual increments of £25 to £1000 a year is attached to these appointments together with a duty allowance at the rate of £180 a year

Senior Sanitary Officer: There are four appointments of this grade two in Nigeria one in the Gold Coast and one in Sierra Leone Salary at the rate of £900 a year rising by annual increments of £25 to £1000 a year is attached to these appointments together with a duty allowance at the rate of £180 a year

Provincial Medical Officer There are seven appointments bearing this title (four in Nigeria, two in the Gold Coast and one in Sierra Leone) with salary at the rate of £800 a year rising by annual increments of £25 to £900 a year and duty allowance at the rate of £160 a year

Senior Medical Officer There are 20 appointments of this grade, with salary at the rate of £600 a year rising by annual increments of £25 to £750 a year and a duty allowance at the rate of £120 a year

The Senior Medical Officer of the Gambia, who is the head of the Medical Department of that Colony draws staff pay at the rate of £120 a year in addition to duty pay

Junior Sanitary Officer There are seven appointments of this grade with salary at the rate of £700 a year rising by annual increments of £25 to £800 a year and a duty allowance at the rate of £140 a year

Medical Officer: The salary attached to this grade is at the rate of £400 a year rising by annual increments of £20 to £500 a year with duty allowance at the rate of £80 a year Medical Officers who have served for five years and are recommended for a higher rate of salary are required to take a special course of study for three months If they obtain satisfactory certificates at the end of the course they are placed on completing six years service, on a scale of salary at the rate of £525 a year rising by annual increments of £25 to £600 a year with duty allowance at the rate of £100 a year A Medical Officer who has served for three years on the maximum salary of this scale (£600) without obtaining promotion is eligible for the grant of further annual increments of £25 up to a total maximum salary of £750 a year Salary at the rate of £500 rising by annual increments of £25 to £600 a year is attached to about ten posts (those of Pathologist at Accra, Assistant at the Medical Research Institute near Lagos and Medical Officer of Health at various places) irrespective of the seniority of the officer holding the appointment In addition to the duty pay (£100 a year) staff pay at the rate of £100 a year is also attached to these posts, and the holder of the appointment draws half of the staff pay during leave of absence,* the remainder being drawn by his locum tenens Certain other allowances are also drawn by members of the Staff (*a*) When the Principal Medical Officer certifies that it is necessary for a medical officer to keep some means of conveyance to enable him efficiently to perform his official duties he may be granted an allowance (*b*) The Government carries free of cost a reasonable amount of stores (*c*) Government officers in Sierra Leone the Gold Coast and Nigeria receive when travelling on duty away from their stations free transport and travelling (or "bush") allowance In the Gambia the travelling allowance is fixed at a rate which includes the cost of transport (*d*) All medical officers whatever their rank while employed with a military expedition will be paid an allowance of 10s a day and they will also be given free rations, or an allowance of 3s a day in lieu of rations whenever other officers employed with the expedition are given free rations or an allowance in lieu of rations While in receipt of these allowances medical officers will not be entitled to any repayment or allowance under (*c*) (*e*) An allowance of £12 is paid to every medical officer before his departure on first appointment towards the purchase of camp outfit Instruments and drugs and all medical appliances (including microscopes when necessary) are supplied by the Government for all public purposes.

Leave and Passages—The ordinary tour of residential service is one year followed by leave with full pay during the voyages to and from England and for four or two months clear in England according as the officer is returning for further service in West Africa or not If an officer is detained beyond the year additional leave is given with full pay for ten days in respect of each completed month beyond twelve whether he is returning or not. If he is invalided before the end of the year the leave with full pay is for the voyages and for ten or five days in respect of each completed month according as he is returning or not Leave granted on the understanding that an officer will return is known as "return leave," and any pay drawn in respect of such leave is liable to be refunded if he does not return. Medical officers desiring an extension of ordinary leave of absence for purposes of study may be granted such extensions with half salary Leave may be extended with half pay for a period not exceeding four months on the ground of ill health or without pay on that or other grounds. Free passages are given to all officers who are granted leave, and free passage is also given on first appointment subject to the officer signing an agreement under which he is liable to refund its cost if he relinquishes his appointment for any other reason than physical or mental infirmity or is removed for misconduct, within three years from the date of his arrival in West Africa. Half pay is given during the voyage out on first appointment The period of probation for Medical Officers is two tours of service

All officers of the Staff except Principal Medical Officers, Deputy Principal Medical Officers Provincial Medical Officers, Sanitary Officers, and a few other officers holding special appointments, are at present allowed to take private practice provided that it does not interfere with the efficient performance of their official duties, but it is within the power of the Governor to withdraw or suspend the privilege in such places and for such periods as he may consider desirable. Private practice does not exist at the majority of stations and as a general rule subject to the exigencies of the service, stations where there is private practice are allocated to senior members of the staff At all the recognised stations single quarters free of rent (but not of rates and similar outgoings) are provided for medical officers or an allowance is paid in lieu of quarters

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* That is, during leave on full salary During leave on half salary he draws only one-quarter of the staff pay during leave without salary he draws no staff pay

Pensions and Gratuities —On attaining the age of 50 years or after 18 years service (of which at least 12 must have been residential) an officer is qualified for a pension calculated at one-fortieth of the last annual[3] salary for each year of service If invalided after a minimum of seven years service he is qualified for a pension calculated at the same rate If invalided before completing seven years service he is qualified for a gratuity not exceeding three-quarters of a month s salary for each six months of service provided that he has been confirmed in his appointment For the purpose of calculating the amount of these pensions and gratuities *leave of absence without salary* is not counted In addition to the ordinary regulations an officer of the West African Medical Staff enjoys the following special privilege At the end of nine years (of which not less than six must have been residential) he will be permitted to retire with a gratuity of £1000 or at the end of 12 years (of which not less than eight must have been residential) with a gratuity of £1250 All claims to pensions are however forfeited on the receipt of such a gratuity In the event of an officer dying in the service after completing the period of residence qualifying him for the smaller or the larger of these gratuities a sum equal to the gratuity in question will be paid to the credit of his estate Officers are recommended not to take their wives out with them until they have acquired experience of the local conditions and have obtained the sanction of the Governor Passages for wives and children are not provided If a candidate is offered an appointment he can usually be allowed sufficient time to make preparations and to terminate the employment in which he may be engaged

Candidates for medical appointments in West Africa are allowed to express a preference for any particular Colony or Protectorate and their wishes in this respect will be borne in mind and met as far as possible, *but they are liable to be posted in the first instance*, or transferred afterwards if necessary to any other West African Colony or Protectorate at the discretion of the Secretary of State Candidates who wish to be posted to the Northern Provinces of Nigeria or the Gambia should be able to ride Officers who may be transferred to pensionable appointments under the Crown elsewhere than in West Africa do not forfeit their claim to pension in respect of their West African service on final retirement provided they have been members of the Staff for at least 12 months

Instruction in Tropical Medicine —Every candidate selected for appointment will unless the Secretary of State decides otherwise be required to undergo a course of instruction for two or three months either at the London School of Tropical Medicine, Royal Victoria and Albert Docks E (near Connaught Road Station) or at the Liverpool School of Tropical Medicine at University College, Liverpool. The cost of the tuition fees board and residence during such instruction amounting to a maximum of £48 8s 10*d* for three months will be borne by the Government in the case of the London School at Liverpool the cost of tuition will be borne by the Government but candidates must make their own arrangements for board and lodging an allowance of £2 a week will be paid to them monthly in arrear for this purpose A daily allowance of 5s (but no salary) will be paid to each candidate monthly in arrear during the course, and may be continued subsequently up to the date of embarkation These payments must be refunded by the candidate if he declines to accept an appointment in any of the Colonies or Protectorates for which he may be selected if he fails to obtain a certificate showing that he has satisfied the school authorities or if he relinquishes the West African service for any other reason than mental or physical infirmity or is removed for misconduct, within three years of the date of his arrival in West Africa. If at the end of the session there exist no vacancy in the staff to which a candidate can be appointed he will be placed in a Reserve and granted an allowance at the rate of £200 a year *until the occurrence of a vacancy* If a medical officer has for any reason not taken a course of instruction prior to appointment he must take it during his first leave of absence

Course of study for higher scale of salary —The approved course of study is the three months course of the West London Post-Graduate College or the London School of Clinical Medicine Greenwich in clinical medicine clinical surgery and pathology Officers are allowed to substitute for this course either the course of study and examination for a recognised diploma or degree in public health sanitary science, or State medicine the course of study and examination for a further medical or surgical diploma or degree or if the Governor on the recommendation of the Principal Medical Officer approves—a course of study in some special branch of medical or surgical practice (e g ophthalmology dermatology, genito-urinary diseases) or an advanced course at the London or Liverpool School of Tropical Medicine Whichever of these courses of study is selected the necessary tuition and examination fees will be paid by the Colonial Government save in the event of an officer s deciding to enter for a further medical or surgical diploma or degree

In conclusion it should be added that the West African Medical Staff, from which many British medical officers have been lent to serve with the Allied forces receive terms and emoluments which compare favourably with other medical services of the Crown Since the outbreak of war it has been the policy of the Secretary of State for the Colonies to refrain from calling the attention of the medical profession to recent improvements in the pay and prospects of the West African Medical Staff in order that the efforts of the naval and military authorities to obtain an adequate supply of medical officers should not be hampered in any degree This consideration no longer applies as it has been so widely recognised by all the younger members of the medical profession that the claims of the Navy and Army are paramount

DENTAL SURGERY

ANYONE who is on the Medical Register is entitled to practise as a dentist, although he cannot register as such without the special licence, but it is of eminent advantage to take the L D S, otherwise few dental appointments at general or special hospitals or dispensaries are available. The subjects beyond those included in the general qualification are—Dental Anatomy and Physiology (Human and Comparative), one course, a separate course of Dental Histology, including the preparation of microscopical sections, Dental Surgery, one course, a separate course of Practical Dental Surgery, a course of not less than five lectures on the Surgery of the Mouth, Dental Mechanics, one course, a course of Practical Dental Mechanics, including the manufacture and adjustment of six dentures and six crowns, Dental Metallurgy, one course, a course of Practical Dental Metallurgy, Practice of Dental Surgery at a recognised school, two years, and a certificate of having been engaged during a period of not less than two years in acquiring a knowledge of Dental Mechanics (this may be obtained by apprenticeship to a duly qualified dental practitioner or in the mechanical department of a recognised dental hospital). The *Dental Schools in London* are the Royal Dental Hospital of London, the National Dental Hospital, Guy's Hospital Dental School, and the London Hospital Dental School Most of the large provincial towns, where there are medical schools, have now dental hospitals

The Registration of Dental Students is carried on at the Medical Council Office in London in the same manner as the existing registration of medical students, and subject to the same regulations as regards Preliminary Examinations. Candidates for a diploma in Dental Surgery must produce certificates of having been engaged during four years in professional studies, including *two years'* instruction in mechanical dentistry The two years of instruction in mechanical dentistry, or any part of them, may be taken by the dental student either before or after his registration as a student, but no portion of such mechanical instruction will be counted as one of the four years of professional study unless taken after registration

It is necessary for anyone practising Dental Surgery in this country to be on the Register, and no foreign qualifications are admitted, except the Dental Diploma granted in Belgium after examination by the Provincial Medical Commission, provided the holder has obtained the grade of "Candidate in Medicine" at one of the four Belgian Universities Diplomates in Dental Surgery of certain Russian Universities who have completed four and a half years studies in Medical and Dental Colleges of the Universities may be allowed to register providing the General Medical Council are satisfied they have completed their course of studies Certain dental qualifications granted in Australia and New Zealand are also registrable The Royal Colleges of the United Kingdom and seven of the Universities grant degrees or licences in Dental Surgery

THE REGISTERING BODIES IN DENTISTRY

The Royal College of Surgeons of England grants a diploma in Dental Surgery under the following regulations, which apply to all candidates who have registered as dental students after *Jan 1st 1897* Candidates are required to pass three examinations the Preliminary Science Examination the First Professional Examination, and the Second Professional Examination I Preliminary Science Examination —This is identical with Part I of the First Examination of the Examining Board in England Candidates who commenced professional study on or after Oct 1st, 1913, must pass the Preliminary Science Examination before commencing the courses required for the Second Professional Examination II The First Professional Examination —The candidate must produce evidence of instruction in Dental Metallurgy and Practical Dental Mechanics The Examination consists of Part I (Mechanical Dentistry) and Part II (Dental Metallurgy), the examination in Dental Metallurgy being by written paper The parts may be taken together or separately III The Second Professional Examination —This is divided into two parts (*a*) the General, (*b*) the Dental. The General part must be passed before the Dental portion The instruction is obtained partly at a General Hospital and partly at a Dental Hospital —The Second Professional Examination consists of Part I, General Anatomy and Physiology General Surgery and Pathology, Part II, Dental Anatomy and Physiology Dental Pathology and Surgery, and Practical Dental Surgery There is a written and *viva voce* examination in each part and a practical examination as well in Part II Exemption from the Preliminary Science Examination is granted to candidates who have passed an Examination in Chemistry and Physics for a degree in Medicine at a University in the United Kingdom, in India, or in a British colony Exemption from Examination in Anatomy and Physiology is granted to candidates who have passed the Second Examination of the Examining Board in England or the corresponding Examination for any degree or qualification in Medicine or Surgery registrable under the Medical Act of 1886 Exemption from Examination in General Surgery and Pathology is granted to candidates who have passed the Examination in Surgery of the Examining Board in England or the corresponding Examinations of the Colleges and University above mentioned. The fee for the diploma is 20 guineas, and is payable as follows — Preliminary Science Examination, 3 guineas, First Professional—Examination, 7 guineas, Second Professional Examination, 10 guineas Synopses of examinations and all further information can be obtained from the Secretary, Examination Hall, Queen square, Bloomsbury, W C

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[3] Except that the pension of an officer who has been promoted within three years of his retirement is calculated on the average of his salary for the last three years

Royal College of Surgeons Edinburgh —Regulations giving a list of Preliminary Examinations recognised for obtaining the Licence in Dental Surgery as well as of the subjects of the Professional Examinations, may be obtained from Mr D L Eadie, Clerk to the Royal College of Surgeons, at 50, George square, Edinburgh Candidates must produce certificates of having, subsequently to the date of registration, been engaged for four years in professional studies and of three years instruction in Mechanical Dentistry from a registered dental practitioner, except in the case of previously registered medical practitioners, when two years will be considered sufficient. Candidates must also have attended a course of instruction at a University or in an established school of medicine or in a provincial school specially recognised by the College as qualifying for the Diploma in Surgery In addition they will be required to have attended in a recognised dental hospital, or with teachers recognised by the College special courses of lectures and instruction in Anatomy and Physiology (Human and Comparative), Surgery, Pathology Materia Medica, Dental Histology, and Practical Dental Mechanics and Metallurgy, two years' attendance at a dental hospital or the dental department of a general hospital recognised by the College Practical instruction in Mechanical Dentistry from a registered Dentist or in the Mechanical Department of a recognised Dental Hospital and School, for *three* years Candidates who have passed the First and Second Examinations for the Triple Qualification will be exempt from the First Dental Examination, and will have the advantage of being admissible either to the Final Dental Examination or to the subsequent Examination for the Triple Qualification or to both. But the First Dental Examination will not be held as equivalent to the First and Second Triple Examinations, and will admit to the Final Dental Examination only Candidates who are Licentiates of this College or who may be registered medical practitioners will be required to produce certificates of attendance on the special subjects only and will be examined in these only for the dental diploma First Professional Examination The candidate must have attended the required courses The examination embraces (1) Chemistry and Physics, and (2) Anatomy and Physiology The fee is £5 5s for the complete examination, and £3 3s is payable for each division. In all cases of rejected candidates the fee for re-entry is £3 3s Second Examination The candidate must have attended the remaining courses of the curriculum must produce certificates showing that he is 21 years of age, and must pay a fee of £10 10s for re-entry £5 5s The examination embraces (1) Surgery and Medicine, and (2) the special subjects of Dental Anatomy and Physiology Dental Surgery and Pathology Dental Materia Medica, Dental Mechanics and Dental Metallurgy with a practical as well as the written and oral examinations in the subjects of Dental and Oral Surgery Pathology, and Mechanics The candidate will be tested in the Treatment of Dental Diseases, in Operative Dentistry, the Administration of Anæsthetics, Orthodontics, and in Prosthetic and Mechanical Dentistry Candidates who claim exemption from the First Dental Examination on the ground of having passed the First and Second Triple Qualification Examinations or other recognised examinations will before being admitted to the Second Dental Examination, be required to pay the total fee of £15 15s payable for the dental diploma Fees and schedules must be lodged with the Clerk not later than one week before the examination.

Royal Faculty of Physicians and Surgeons of Glasgow —The regulations as to certificates curriculum, number, and subjects of examinations, fees, &c., are in effect similar to those of the Royal College of Surgeons of Edinburgh, but embrace Dental Bacteriology Candidates can enter for the First Examination in three divisions, the first embracing Physics and Chemistry, the second Dental Metallurgy and Dental Mechanics, and the third Anatomy and Physiology The examination in Dental Mechanics is practical, and there is at the Final Examination an examination in Practical Dentistry conducted in a dental hospital Copies of regulations, &c, to be obtained from Mr Walter Hurst, Registrar, Faculty Hall, 242, St. Vincent-street Glasgow

Royal College of Surgeons in Ireland —Candidates for the Licence in Dental Surgery are required to pass two professional examinations Before the First Examination the candidate must produce evidence of having attended courses in Theoretical and Practical Chemistry, including Metallurgy and Physics, at a recognised institution, of having been registered as a medical or dental student by the General Medical Council, and of having attended courses of instruction in the following subjects at a recognised school of medicine (*a*) Anatomy Lectures, (*b*) Dissections with Demonstrations, (*c*) Physiology, including Dental Physiology, (*d*) Practical Physiology and Histology, including Dental Physiology and Histology, Human and Comparative Before the Final Dental Examination the candidate must have been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under the direction of the superintendent of the Mechanical Department of a recognised Dental Hospital, and have attended, at institutions recognised by the College for the purpose, the following courses of instruction (*a*) Dental Surgery and Pathology, Orthodontia, and the Materia Medica and Therapeutics applicable to Dental Surgery Lectures Two courses (*b*) Dental Mechanics Lectures Two courses (*c*) Dental Anatomy Lectures One course. (*d*) The practice of a Dental Hospital, or of the Dental Department of a General Hospital. Two years He must also have attended Clinical instructions at a recognised General Hospital during the ordinary teaching sessions (nine months), and have been engaged during four years in the acquirement of professional knowledge subsequently to the date of registration as a medical or dental student One year's *bonâ fide* apprenticeship with a registered dental practitioner, after being registered as a medical or dental student, may be counted as one of the four years of professional study He must be 21 years of age.

In the First Dental Examination candidates will be examined in (A) Physics and Chemistry, including Practical Chemistry and Metallurgy (B) Anatomy, Physiology, and Histology—General and Dental. All the subjects may be passed at the same time, or they may be passed in two groups (A) and (B) The examination is partly written, partly *vivâ voce*, and partly practical

In the Final Dental Examination candidates will be examined in General Pathology Medicine, and Surgery, Dental Surgery and Dental Pathology, with the Materia Medica and Therapeutics applicable to Dental Surgery, Dental Mechanics and Metallurgy, Orthodontia. Candidates must pass in all the subjects at one examination The examination is partly written, partly *vivâ voce*, and partly practical, and includes the examination of patients and the performance of dental operations Candidates are required to provide their own instruments and gold for filling The First Dental Examination will commence on the first Mondays in the months of February, May, and November The Final Dental Examination will commence on the second Mondays in the months of February, May, and November The total fee for the Diploma in Dental Surgery is 20 guineas Candidates must pay the fees for examinations from which they are exempted, unless when such exemptions have been granted in virtue of examinations passed before the Conjoint Board in Ireland

University of Birmingham —The teaching of Dentistry is undertaken by the University acting in association with the Birmingham Dental Hospital and the Birmingham Clinical Board The instruction at the Dental Hospital is carried out under the direction of the University Dental Clinical Board, so that students may fully qualify themselves for the Dental Diploma (L D S) of this and other universities and licensing bodies There is a special and well equipped Dental Museum and Laboratory An Entrance Exhibition, value £37 10*s* is awarded annually at the commencement of the winter session The following are the regulations for Degrees in Dentistry —1. The degrees conferred by the University are those of Bachelor and Master of Dental Surgery (B D S and M D S) 2 All candidates for these degrees must pass the same Matriculation Examination as that required from candidates for Medical Degrees 3 The degree of Bachelor of Dental Surgery is not conferred upon any candidate who has not obtained a Licence in Dental Surgery The candidate is not eligible for the degree until a period of 12 months has elapsed from the passing of his examination for the Licence in Dental Surgery Of this period at least six months must be spent in the dental department of a general hospital approved by the University 4 *A* In addition to the Licence in Dental Surgery the candidate must produce evidence that he has attended the courses required by medical students of the University in the following subjects and passed the Examinations held in the same for Medical and Surgical Degrees (*a*) Chemistry and Practical Chemistry, (*b*) Physics and Practical Physics, (*c*) Elementary Biology, (*d*) Anatomy and Practical Anatomy, and (*e*) Physiology and Practical Physiology *B* That he has passed the class examinations in (*f*) One Special Course of Lectures on Medicine, (*g*) One Special Course of Lectures on Surgery, and (*h*) Pathology and Bacteriology *C* That he has attended courses and passed the class examinations in (*k*) Dental Histology and Patho-Histology, (*l*) Comparative Dental Anatomy, and (*m*) Dental Surgery and Prosthetic Dentistry *D* That he has received instruction in the Clinical Examination of living cases at the dental department of a general hospital for a period of not less than six months 5 The Final Examination will deal with the subjects in Classes *C* and *D* 6 On the expiration of 12 months from the date of passing the Examination for the Degree of Bachelor of Dental Surgery, the candidate will be eligible for that of Master of Dental Surgery 7 For this degree candidates will be required to submit a thesis containing original work and investigations in some subject connected with Dentistry, which thesis shall be submitted to examiners to be nominated by the Dental Advisory Board

University of Bristol —Candidates for the degree of Bachelor of Dental Surgery must be not less than 21 years of age and shall have pursued the courses prescribed by University regulations during not less than five years, of which three shall have been passed in the University, and shall have been registered as dental students by the General Medical Council All candidates for the degree of B D S are required to satisfy the examiners in the several subjects of four examinations The First Examination The subjects are Chemistry, Physics, and Zoology and the curriculum extends over one year The Second Examination The subjects are Dental Mechanics, Dental Metallurgy, and Dental Materia Medica, and the candidate shall produce evidence of having served for two years an approved pupilage in Dental Mechanics The Third Examination The subjects are Anatomy, Physiology, and Histology, Dental Anatomy, and Dental Histology The Final Examination The subjects are Medicine and Surgery, Dental Surgery (including Prosthetics), Operative Dental Surgery, and Dental Bacteriology Degree of Master of Dental Surgery Candidates shall be Bachelors of the University, shall present a Dissertation on some subject of Dental Surgery to be approved by the Examiners, and pass an examination in Dental Surgery Diploma in Dental Surgery Candidates need not be undergraduates, but shall be registered dental students before being admitted to any professional examination, the curriculum extends over four years A two years' pupilage in Mechanical Dentistry is required, and four examinations must be passed the subjects of which diff only from those of the B D S in that Zoology is n required for the First Examination, and Medicine is n required for the Final Examination Candidates who a already registered medical practitioners shall be furth exempted from study and examination in Physics a Chemistry, Anatomy, Physiology and Histology, Medicir and General Surgery

University of Durham —Every candidate for the Licen in Dental Surgery must be registered as a dental studen There are four Examinations The subjects are —*Fir* (*a*) Chemistry, and (*b*) Physics *Second* (*a*) Den Mechanics, Theoretical and Practical, (*b*) Dental Metallur *Third* (*a*) Anatomy, (*b*) Physiology and Histolog (*c*) Dental Anatomy and Dental Histology, and (*d*) Den Materia Medica. *Final* (*a*) Surgery, (*b*) Dental Surge including Prosthetics and Orthodontia, (*c*) Operative Den Surgery, Practical Examination, and (*d*) Dental Patholc and Bacteriology A candidate before presenting hims for examination is required to furnish certificates instruction in the following subjects, attended af registration as a dental student at recognised Colle or Schools —*First Examination* Chemistry and Physi *Second Examination* Dental Mechanics and Dental Met lurgy *Third Examination* Anatomy, with Dissectio Physiology, Histology, Dental Anatomy and Physiolog Dental Histology, and Dental Materia Medica *Fi Examination* Dental Hospital Practice (two year General Hospital Practice (nine months), Medicine Lectu (two terms), Surgery Lectures (two terms), Dental Surg and Pathology (a course of not less than 20 lecture Dental Bacteriology (three terms), Operative Dental Surg (not less than 12 lectures), and Anæsthetics (a course not less than one month)

Before admission to the Final Examination each candic must furnish evidence (1) of having attained the age o years, (2) of having undergone a three years' pupilag Mechanical Dentistry with a registered dentist, and (3 having been engaged in professional study for at least years subsequent to registration as a dental student. examinations will be held concurrently with the med examinations, and the fees payable by candidates ar follows First Examination, £2 10*s*, Second Examinat £2 10*s*, Third Examination, £3 10*s*, Final Examinat £3 10*s*, fee for Licence, £3, total, £15 For re exami tion First Examination, £1 10*s*, Second Examinat £2, Third Examination, £2 (in one part only, £1), Fo Examination, £2. The practical examinations in dent will be conducted at the Newcastle Dental Hospital

University of Leeds —The degrees in Dental Sur are Bachelor of Dental Surgery (B Ch D) and Maste Dental Surgery (M Ch D) All candidates for the degr Bachelor of Dental Surgery shall be required to have pa the Matriculation Examination, to have pursued there approved courses of study for not less than five acad years, two of such years at least having been passed i University subsequently to the date of passing Parts I II of the First Examination, and to have completed period of pupilage or hospital attendance, or both, as be prescribed by the regulations of the University candidate will be admitted to the degree who has attained the age of 21 years on the day of graduation candidates are required to have passed the following minations the First Examination, the Second Examina and the Final Examination. Each examination will in practical work in the subjects offered. All candidates be required, before presenting themselves for examinati furnish certificates testifying that they have attende prescribed courses of instruction in accordance wit regulations of the University in each of the su which they offer, and that they have fulfilled the requirements of the ordinance and regulations in re of such examination Candidates for the Diploma in D Surgery (L D S) are required to present certificates sh that they have attained the age of 21 years, that they attended courses of instruction approved by the versity, extending over not less than four years, that they have completed a pupilage of three years of such years at least having been taken before First Professional Examination. Candidates are re to satisfy the examiners in the several subjects o following examinations A preliminary examinati

Arts, a preliminary examination in Science, the First Professional Examination, and the Final Examination The classes in the Department of Dentistry begin in October The instruction in the Preliminary subjects of Chemistry, Physics, and Biology are given at the University in College road. The classes in the other subjects and the systematic courses in Dental subjects are held in the School of Medicine of the University in Thoresby Place The clinical instruction is given in the Dental Department of the Leeds Public Dispensary, which is affiliated with the University and recognised by the Royal College of Surgeons Applications for the prospectus should be made to the Dean of the Faculty of Medicine

University of Liverpool (Liverpool Dental Hospital Clinical School and School of Dental Surgery) —The University grants a Licence in Dental Surgery (L D S) and degrees in Dental Surgery (B D S and M D S) The courses of systematic instruction are given in the University buildings, five minutes' walk from the Dental Hospital The two institutions are now closely associated, and the management of the curriculum is in the hands of the Board of Dental Studies The Dental Hospital, covering a site of 672 square yards, was opened in March, 1910, equipped in each department with every modern accessory and receives constant additions The laboratory is in charge of a skilled dental mechanic under the supervision of the Director of Dental Education and Dental Staff, and students are able to undertake at the hospital the whole of their training in Mechanical Dentistry The times of the lectures at the University are arranged to meet the convenience of students, thus allowing the maximum time for attendance upon Dental Hospital practice The staff of the hospital includes 12 Dental Surgeons, three Demonstrators, six Anæsthetists three House Surgeons, and a Curator Fees The composition fees are as follows Licence course (L.D S) Composition fee £58 10s for the course of other licensing bodies £61 10s, payable in two equal instalments, the first on entry, the second 12 months later Two years' instruction in Mechanical Dentistry (pupilage) and two years' Dental Hospital Practice (combined), £100, or in two instalments of £52 10s each. Degree course (B D S) £67 10s for all lectures (including Chemistry, Physics, and Zoology) in three instalments Two years' dental hospital, £21, general hospital practice, £10 10s, three years mechanical instruction (pupilage) £105 Further information may be had from the Director of Dental Education, Mr W H Gilmour

University of Manchester —In the University of Manchester the Dental Department forms an integral part of the Faculty of Medicine This contains a series of laboratories, lecture rooms, and museums which will bear comparison with those of any other school in the kingdom, and the fullest opportunities for study are offered to students preparing for any of the professional examinations Instruction adapted to the requirements of students preparing for the B D S Degree and the Dental Diplomas of the University the Royal College of Surgeons of England, and of other licensing bodies is given during the Winter and Summer Sessions both at the University and at the Dental Hospital of Manchester adjoining the University The required general hospital practice is taken at the Manchester Royal Infirmary Women students are admitted to the classes in the Dental Department, and for them common rooms are provided. The composition fee for candidates for the University degree of Bachelor of Dental Surgery is 60 guineas, payable in two equal instalments at the beginning of the first and third years of studentship The composition fee for candidates for the University Diploma in Dentistry is 55 guineas, payable in two equal instalments at the beginning of the first and third years of studentship The composition fee for candidates for the L D S of England is 60 guineas payable in two equal instalments at the beginning of the first and third years of studentship Students who have already served their apprenticeship with a private practitioner, and who propose to complete the final portion of their attendance at the University and at an approved dental hospital will be required to pay the composition fee in two equal instalments at the commencement of the first and second years of studentship The composition fee does not include the hospital fees the examination fees, the fee for the conferment of the degree or the diploma the registration fee, nor the fees for chemicals and chemical apparatus

National University of Ireland —This University grants the degrees of Bachelor of Dental Surgery and a degree of Master of Dental Surgery A student may not be admitted to the Degree of Bachelor of Dental Surgery unless a period of not less than four years shall have elapsed from the date of his matriculation, during which period he must have pursued an approved course of study of not less than nine terms For the degree of Bachelor of Dental Surgery candidates must pass four examinations, the first two being the same as those for the first and second examination in Medicine The subjects of the third examination are Dental and Practical Pathology, Dental Surgery and Dental Medicine, the subjects of the fourth being Dental Surgery and Pathology, Dental Mechanics, Operative Dentistry, Orthodontia, and Dental Materia Medica A candidate for the degree of B D S must produce evidence of having been engaged during a period of two years in acquiring a practical familiarity with the details of Mechanical Dentistry under the instruction of a registered dentist, or under professional direction in the mechanical department of a dental hospital approved by the University A portion of or the entire period may be served before commencing study for the degree of B D S, but no portion so taken prior to commencement of study shall count as part of the four years of Dental Study The degree of Master of Dental Surgery will not be granted until three years after the B D S has been obtained.

TEACHING INSTITUTIONS IN DENTISTRY

See also under Universities of Birmingham, Leeds, Liverpool, and Manchester above

LONDON

Royal Dental Hospital of London, School of Dental Surgery, Leicester square —A school of the University of London, and women are now admitted as students and are eligible for all hospital appointments and school prizes —The school provides the special dental education required by the Royal College of Surgeons for the Licence in Dental Surgery The general part of the curriculum may be taken at any general hospital The hospital is open from 9 A M to 5 P M, there being one staff for the morning and another for the afternoon of each day Pupils are received for the training in dental mechanics recognised by the curriculum. The demonstrators at the commencement of each session give a course of lectures on Operative Dental Surgery The six house surgeoncies are held for six months each and are open to all qualified students The lecturers in addition to their lectures, give special demonstrations on the Microscopy of Dental Anatomy and Dental Surgery The lecturer on Dental Mechanics also gives practical demonstrations in the laboratory There are two Entrance Scholarships in Chemistry and Physics of the value of £50 and £25 respectively One Entrance Scholarship in Dental Mechanics and Metallurgy value £25, open to pupils of the Hospital only One Entrance Scholarship of £25 in Dental Mechanics, open to pupils of private practitioners The Saunders Scholarship of £20 awarded to second year students The Storer Bennett Research Scholarship for Scientific Research in any branch of Dental Surgery, value £50, is awarded triennially The Alfred Woodhouse Scholarship of £35 and the Robert Woodhouse Prize of £10 for Practical Dental Surgery Prizes and certificates are awarded by the lecturers for the best examinations in the subjects of their respective courses, at the end of the summer and winter sessions Consulting Physician Sir Richard Douglas Powell, Bart Consulting Surgeon Sir Frederick Treves, Bart Consulting Dental Surgeon Mr C S Tomes, F R S Dental Surgeons Mr J F Colyer, Mr W H Dolamore, Mr J G Turner, Mr N G Bennett, Mr D P Gabell, Mr R McKay, and Mr W W James Assistant Dental Surgeons Mr F Coleman Mr Landon Whitehouse, Mr F St J Steadman, Mr H Stobie, and Mr E F Ackery Anæsthetists Dr Dudley Buxton and Mr H Hilliard Assistant Anæsthetists Mr F Trewby and Mr C Loosely Demonstrators Mr A T Pitts, Mr J F Gow, Mr B Grellier, Mr E L Fickling, and Mr T C Stretton Lecturers —Dental Anatomy and Physiology (Human and Comparative) Dr Marett Tims Dental Surgery and Pathology Mr J G Turner Operative

Dental Surgery Mr W W James Dental Mechanics Mr D P Gabell Metallurgy in its application to Dental Purposes Mr P A Ellis Richards Dental Materia Medica Mr F Coleman Chemistry Mr P A Ellis Richards Physics Mr John A Carpenter Anæsthetics Dr Dudley Buxton Fee for two years' hospital practice required by the curriculum, including lectures, £53 3*s* in one payment, or £55 13*s*, in two yearly instalments The curriculum requires two years to be passed at a General Hospital, the fee for this is about £60 Both hospitals can be attended simultaneously For the lectures in Chemistry and Physics for the Preliminary Science Examination £10 10*s* The fee for the instruction in Dental Mechanics and the two years' hospital practice required by the curriculum is £150 if paid in one instalment, or 150 guineas if paid in three equal instalments The fee for tuition in Dental Mechanics is 50 guineas per annum, for one year's hospital practice £21 The Dean attends at the hospital every Thursday morning from 9 45 to 11 o'clock, or he can be seen at other times by appointment The Winter Session opens on Oct 1st

University College Hospital Dental School —Corner of Great Portland and Devonshire-streets, W —Students are entered as students of University College Hospital and, as such, attend the classes of Chemistry Physics, Anatomy, and Physiology in University College, which is a few minutes' walk from the Dental Department in Great Portland street, hitherto known as the National Dental Hospital The First Dental School to admit Women Students Practical courses to comply with the R C S curriculum are held Clinical Lectures and Demonstrations are given, and each student on entering passes through a preliminary course under a demonstrator Two Entrance Exhibitions, of the value of £40 and £20, are open for competition Prizes are open for competition at the end of each course of lectures Fee for the full curriculum of four years, in all subjects required by the Royal College of Surgeons, 180 guineas, or in four instalments of 62, 41, 41, 41 guineas A composition fee for medical men has been arranged covering the Two Years' Mechanical Work, Hospital Practice, and Lectures required by the curriculum of the Royal College of Surgeons amounting to 120 guineas Hospital Practice to registered practitioners by special permission of Committee, 12 months, £15 15*s* The Calendar, containing full information as to Lectures, Fees, Prizes, and Subjects for the Entrance Exhibitions may be had on application to the Dean, who attends the Hospital on Tuesday mornings at 10 30

Guy's Hospital —The work of the Dental Department begins daily at 9 A M both in the extraction rooms and in the conservation room The Extraction Rooms A new Dental Out-patient Department has been provided There is ample accommodation for ordinary extractions and anæsthetic extractions, together with waiting and retiring rooms Patients are admitted between 8 45 and 9 30 A M, and are seen by the dental surgeon for the day, the dental house surgeon, the assistant dental house surgeon, and the dressers The Conservation Room is open from 9 A M till 5 P M It has recently been entirely remodelled and greatly enlarged, giving a floor space of over 6000 square feet It affords accommodation for about 100 dental chairs with the necessary equipment of the most modern type, for the use of the Dressers, who, under the supervision of the Staff, perform the various operations of Dental Surgery The members of the staff attend every morning and afternoon to give demonstrations and otherwise assist students in their work in the Conservation Room and Mechanical Laboratory The Probationers' Laboratory is supervised by two of the staff demonstrators, and instruction is given in operative dentistry on a "mannikin" to students during their first three months of study Pupils in Dental Mechanics are received, and a graded, systematic, and full course of instruction, extending over two years, is carried out Dental students have the opportunity of attending at this hospital the whole course of instruction required by the examining board for the L D S Eng —viz, two years' pupilage in dental mechanics, the special lectures and practice of the Dental Department, and the general lectures and practice of the Medical School The fees for these two courses may be paid separately or together, or they may be combined with the fees required to be paid for the course for a medical diploma Students who enter for a medical as well as a dental diploma are allowed to pursue their study of Dentistry during any period of their medical course most convenient to themselves without further charge Four Entrance Scholarships in Dental Mechanics of the value of £20 each are offered for competition annually, two in September and two in April, and prizes of the aggregate value of £47 are awarded for general proficiency and for skill in Practical Dentistry A Dental Travelling Scholarship of the value of £100 is awarded every second year Dental students are eligible for admission to the Residential College and enjoy the privileges of students in the Medical School Staff.—Consulting Dental Surgeons Mr F Newland Pedley and Mr W A. Maggs Dental Surgeons Mr Wynne Rouw, Mr H L Pillin, Mr M F Hopson, and Mr J B Parfitt Assistant Dental Surgeons Mr J Lewin Payne, Mr E B Dowsett, Mr F J Pearce, and Mr H C Malleson Demonstrators of Practical Dentistry Mr F N Doubleday, Mr G B Pritchard, Mr W S Stranack, Mr W K Fry, Mr L Price Harris, and Mr E. Thorne Demonstrator of Orthodontic Dentistry Mr F Bocquet Bull Demonstrators of Prosthetic Dentistry Mr E A Tomes and Mr T Barton Anæsthetists Mr C J. Ogle, Dr F E Shipway, Mr H. M Page, and Mr A. J McNair Lecturers —Dental Anatomy and Physiology Mr Hopson Dental Surgery and Pathology Mr Wynne Rouw Operative Dental Surgery Mr Parfitt. Dental Mechanics Mr Payne Practical Dental Mechanics Mr Pillin Dental Bacteriology Dr Eyre Dental Microscopy Mr Dowsett and Mr G Marshall Metallurgy Professor T M Lowry Practical Dental Metallurgy Mr Pearce Resident Dental Officer Mr F Bocquet Bull Curator of Dental Museum Mr Dowsett Dean Sir Cooper Perry Sub-Dean Dr M S Pembrey For Lectures on the general subjects of Dental Curriculum *vide* Guy's Medical School

London Hospital —This school is a part of the London Hospital and Medical College, and is fully equipped on the most modern lines and with the latest appliances It provides a complete curriculum in all subjects for the L D S Diploma, and is admirably adapted for the purpose of teaching The Conservation Room is well lighted and ventilated and fitted with pump chairs of the latest pattern, the fountain spittoon at every chair has been specially designed and has attached to it a saliva ejector, hot and cold water, compressed air, gas and electric current, also a swing bracket to carry the students' cabinet Electric sterilisers are supplied in each department and motor engines where required. The School possesses in addition to the Theatres, Laboratories and Museums in the College a special Museum of Dental Anatomy and Surgery, Operative Dentistry, Prosthetic and Extraction Rooms, and Laboratories for Practical Dental Metallurgy and Dental Prosthesis A systematic course of instruction in Dental Prosthesis is arranged for pupils The up-to-date Laboratory contains every modern apparatus and is in charge of a skilled curator and his assistants Connected with the Medical College and Dental School are a Library, Athenæum, Clubs' Union, Dining Hall with moderate tariff, Students' Hostel, and an Athletic Ground Lecturers —Chemistry and Dental Metallurgy Hugh Candy, B A., B Sc. Physics A. H Fison, D Sc. Human Anatomy Professor William Wright. Physiology Professor E P Cathcart Dental Surgery and Pathology Sir Francis Farmer Operative Dental Surgery Dr George Northcroft. Dental Prosthesis Mr Wilton Thew Operative Dental Prosthesis Dr G Paton Pollitt. Odonto-phosopic Orthopædics Dr Harold Chapman Dental Anatomy Professor William Wright. Dental Microscopy Mr Evelyn Sprawson. Dental Bacteriology Professor William Bulloch, F R S Dental Materia Medica Dr O Leyton and Mr F A Hocking, B Sc Lond. Dental Anæsthetics Dr R. J Probyn Williams For full particulars as to fees and course of study advised apply to the Dean (Professor William Wright, M B, D Sc., F R C S) who will be glad to make arrangements for anyone wishing to see the Dental School and Medical College

The above arrangements are subject to revision in consequence of circumstances arising out of the war

London (Royal Free Hospital) School of Medicine for Women —Full courses are arranged for women students for the study of dentistry, and in preparation for the Licence in Dental

Surgery of the Royal College of Surgeons of England, at the London (Royal Free Hospital) School of Medicine for Women, in conjunction with the London Dental Hospital, Leicester Square, and the National Dental Hospital, Great Portland street, W The course is arranged as follows First and second years Chemistry, Physics, and Dental Mechanics Third, fourth, and fifth years Anatomy, Physiology, and Special Dental Courses, Courses in Medicine and Surgery, General Hospital Course, Dental Hospital Course The combined fees at the London School of Medicine for Women and the National Dental Hospital are £180 if paid in one sum on beginning the course, or £191 if paid in three annual instalments Bursary The Council of the School will award annually (until further notice) an "Agnes Guthrie" Bursary of the value of £60 to a student fulfilling the required conditions, who enters for the full dental course Candidates are required to send in applications on or before July 1st, to the warden and secretary, from whom a prospectus of the School and all particulars can be obtained

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PROVINCIAL

Birmingham Dental Hospital —The Dental Hospital was founded in 1858, and was recognised by the Royal College of Surgeons in 1880 for the teaching of Dental Students Having an annual attendance of about 16,000 patients, it affords every advantage for students about to enter the profession to acquire a thorough practical knowledge, as required by the Medical Council The present Hospital was opened on July 6th 1905 It has accommodation for 50 students The equipment is in accordance with the most modern requirements for the efficient teaching and practice of Dental Surgery The operations performed annually average 35,000 including 5000 gold and other fillings, and many cases of crowns, bridges, porcelain inlays, and regulations By arrangements with the Birmingham University and with the General and Queen's Hospitals the entire course of Lectures, Hospital Practice, &c., may be completed for an inclusive fee of £96 15*s*, or including Mechanical Pupilage, £186 The instruments and materials necessary for Hospital Practice cost about £28 The Composition Fee for the courses required for the L D S of the University or any of the Corporations alone, is £60, payable in two annual instalments at the commencement of the first and second years, that for the courses required for the L D S and the Degree in Dentistry of the University is £75, that for the L D S in combination with the M R C S and L R C P is £85, and that for the M B, Ch B, and B D S is £95 All of these composition fees are payable in two annual instalments at the commencement of the first and second years Each of these fees covers the cost of the courses given at the University for the qualifications indicated, but does not include fees for Hospital teaching For two years' dental hospital practice the fee is 20 guineas, payable in two instalments of 10 guineas each at the commencement of the first and second (hospital) years respectively For two years' mechanical pupilage, 85 guineas, which may be paid in two annual instalments of 50 and 35 guineas respectively, mechanical pupils may join for a probationary period of one month, fee 5 guineas, which is deducted upon payment of the full amount For general surgical hospital practice, lectures and demonstrations Surgery, two winters £10 10*s* One Entrance Scholarship is offered annually of the value of £37 10*s* It is awarded to the student who, entering for the Dental Degree of the University in October, or having entered not earlier than the previous April, shall pass the best examination in the subjects studied during his apprenticeship Candidates must be under the age of 21 years Application for admission, together with a certificate of birth must be sent to the Dean of the Medical Faculty on or before Oct 15th Staff —Dean Mr W Thompson Madin Consulting Physician (Vacant) Consulting Surgeon Mr Haslam Consulting Dental Surgeon Mr Frank E Huxley Honorary Dental Surgeons Mr F W Richards Mr F H Goffe Mr A E Donagan Mr J Mountford Mr W T Madin Mr J E Parrott Mr W M Knott, and Mr G F Cale Matthews Honorary Assistant Dental Surgeons Mr A H Parrott Mr C H Howkins, Mr S H Roe, Mr A W Wellings, Mr W Bowater and Mr Harold Round Honorary Orthodontics Officer Mr G F Cale-Matthews Anæsthetists Dr S W Haynes Dr W J McCardie, Mr R H Rollinson Whitaker, Dr R W Taylor Haddow, Mr L Kirkby Thomas, Dr Haitly Burn, and Dr D Buchan Demonstrators Dr Humphrey F Humphreys, Mr N A. Austin, and Dr R A Broderick House Surgeons Mr R L Booth and Mr L Williams Prosthetic Department Mr W M Knott and Mr S H Roe

Leeds Public Dispensary —The Dental Department of the Leeds Public Dispensary is fully equipped to provide training for Dental Students, and affords every opportunity for the student to prepare for any of the Dental Degrees or Diplomas The Demonstrator of Operative Dental Surgery instructs students during their probationary course At the completion of this training students have patients allotted to them by the Demonstrator, and have every opportunity of acquiring knowledge from the members of the Staff, two of whom are in attendance each day The following prizes are awarded —First year Students, value 2 guineas Operative Dental Surgery Prize, value 5 guineas Two prizes in Prosthetic Dentistry (*a*) a prize, value 2 guineas, for first-year pupils, (*b*) a prize, value 5 guineas, open for competition to all Students Extraction prize, value 2 guineas, open for competition to all Students A prize in Orthodontics, value 5 guineas, is open to all students Dental Staff —Consulting Dental Surgeon Mr Frederick Sherburn Dental Surgeons Mr Percival T Leigh, Mr Walter Marston, Mr A. G G Plumley, Mr Stephen D Hey, Mr David Saville, and Mr J Newsome Taylor Assistant Dental Surgeons Mr James W Mawer, Mr Geoffrey A. Phillips, Mr J K Crawford, Mr W S Thorburn, Mr Harold R Bentley, and Mr Sidney H Hole Anæsthetists Dr F Whalley and Mr E Wrigley Braithwaite Demonstrator and Tutor Mr O Vickers Curator of Dental Museum Dr A G G Plumley House Surgeon Mr E A Rogerson Instructor of Dental Mechanics Mr C E Foster Warden Mr Stephen D Hey, to whom all communications should be addressed

Dental Hospital of Manchester —This Hospital is in association for teaching purposes with the University of Manchester and the Royal Infirmary, and is in the centre of a very large population Courses of study are provided to meet the requirements of the various examining bodies, including those of the University of Manchester for the qualifications L D S and B D S, and the L D S of the Royal College of Surgeons of England Clinical instruction is given by the members of the staff and by the house surgeons and demonstrators, and also by the honorary anæsthetists in the administration of nitrous oxide gas, a special class in anæsthetics is conducted by the clinical tutor in that subject

A Travelling Scholarship, value £100, will be awarded from time to time Ten prizes, varying in value from £2 to £8 are awarded annually

For the whole course of hospital instruction for the L D S (including two years' mechanical training) the fee is £100, or if paid in instalments, £105 For the two years' Operative Course only, £21, or if paid in two instalments, 21 guineas For the whole course of hospital instruction for the B D S degree (including mechanical training), £130, or if paid in instalments, 130 guineas Additional practice in Dental Mechanics may be taken by pupils who have already received their mechanical training elsewhere, at a fee of £20 for six months

Women students are admitted to the practice of the hospital.

Staff —Consulting Physician Dr J J Cox. Consulting Surgeon Mr J Howson Ray Consulting Dental Surgeons Mr I Renshaw, Mr W Dykes, Mr W Simms, and Mr J W Dunkerley Dental Surgeons Mr G G Campion, Mr Mr J W Gibbons, Mr D Headridge, Mr R Howard, Mr J Hilditch Mathews, Mr H. W Norman, Dr C H Preston, Mr T E Sherratt, Mr J Stephenson Mr G O Whittaker, Mr S S Doran, Mr T Dykes, Mr Felix Rawsthorne, Dr H Simms and Mr B J Rodway Anæsthetists Mr A. Wilson, Mr S R Wilson Mr E Moir and Dr W Wilson Prosthetic Dental Surgeons Mr J Stephenson and Mr B J Rodway Clinical Tutor in Anæsthetics Mr S R Wilson Demonstrator in Operative Dental Surgery (Vacant) Demonstrator in Orthodontics (Vacant) Demonstrator in Dental Prosthetics Mr E V Pollitt Instructor in Dental Mechanics Mr H W Fillan Tutor Dr C H Preston Curator of Museum Dr C H Preston.

Copies of the Prospectus will be forwarded on application to Mr J Hilditch Mathews Dean.

Newcastle-upon-Tyne Dental Hospital and School —This Hospital is centrally situated (within five minutes of the various colleges, infirmary, and railway station), the rooms are well lighted and thoroughly equipped for carrying on the work Dental surgeons and an anæsthetist attend each morning A tutorial dental surgeon is also in attendance The Composition Fee for the special Dental Lectures and Dental Hospital Practice is £45 3s if paid in one sum, or £46 4s if paid in two instalments of £23 2s The Composition Fee for the Lectures at the Colleges of Medicine and Science is 40 guineas, in addition to this there is a library and an athletic fee Particulars of the fee for General Hospital Practice may be obtained from the Senior House Physician, Royal Victoria Infirmary, Newcastle upon Tyne Medals and Certificates of Merit are granted to students showing certain standards of proficiency in the various classes at the Dental School *Lecturers* —Dental Anatomy and Physiology Mr E Y Richardson Dental Surgery and Pathology Mr J Coltman. Operative Dental Surgery Mr T R D Walkinshaw Dental Histology Mr O L Routledge Dental Mechanics Mr J W Daniels Dental Materia Medica Mr J Bolam Dental Metallurgy Mr C Lotinga Orthodontia Mr A Jameson Dental Anæsthetics Dr W E Alderson The prospectus of the Dental Hospital and School, containing full information, may be obtained from either Mr J T Jameson, 12, Windsor crescent, Newcastle upon Tyne, Dean, or Mr James Coltman, 13, Ellison place, Newcastle upon Tyne, Vice Dean

Devon and Exeter Dental Hospital, 24, Southernhay, West, Exeter —Established 1880 —The hospital is open on Tuesdays, Wednesdays, and Thursdays, and patients are admitted between the hours of 9 and 11 A M Students attend the practice of the hospital under the control of the medical officers Honorary treasurer, Mr J M. Ackland, secretary, Mr Albert G Littlejohn

SCOTLAND

The Incorporated Edinburgh Dental Hospital and School —The Edinburgh Dental Hospital and School is located in a spacious and well equipped building at 31, Chambers street and offers special advantages to dental students The General Courses required for the Dental Diploma may be taken in the Medical School of the Royal Colleges of Physicians and Surgeons or in the University schools The hospital attendance and clinical instruction are taken at the Royal Infirmary The University, Medical Schools, and Royal Infirmary are within three minutes' walk of the Dental Hospital The special courses are taken in the hospital The Dental Hospital practice, extending over two years, affords a student ample opportunity for a full acquaintance with every branch of dentistry The hospital admits a limited number of indentured pupils They receive their instruction in Mechanical Dentistry concurrently with the general and special courses A premium of 60 guineas is payable with each such pupil The practice and lectures of the hospital are recognised by, and qualify for, all the Licensing Boards The cost of the hospital outfit of instruments is included in the Dental Hospital fee of £31 10s The minimum cost of classes and Diploma for the whole course of dental instruction amounts to £93 12s Those students who desire to take a Medical and Surgical Diploma in addition to the L D S have in this school admirable facilities for so doing The triple qualification of the Royal College of Physicians and Surgeons of Edinburgh and the Royal Faculty of Physicians and Surgeons of Glasgow is recommended. The minimum cost of Professional Education, the Triple Qualification, and the Licence in Dental Surgery amounts to £167 14s Further particulars can be obtained from the Dean, Mr W Guy

Incorporated Glasgow Dental Hospital and School, 158, Renfrew-street, and 15, Dalhousie street, Garnethill, Glasgow —Lectures will be delivered on the following subjects Dental Mechanics, Dental Metallurgy, Dental Anatomy and Physiology, Dental Surgery and Pathology, Anæsthetics, Operative Technique, Dental Bacteriology, Operative Dental Surgery, Dental Histology, and Crown and Bridge Work. Fees for two years' hospital practice £18 18s The Composite fee for Lectures and Hospital Practice £40 The hospital is opened daily from 5 to 7 P M (Saturdays excepted) Students may only enrol during the months of April or October Summer session begins in April. Winter session begins in October Prospectus may be had from the Secretary, D M Alexander 186 St. Vincent-street, Glasgow

Glasgow Royal Infirmary (Dental Department) —Mr W Taylor attends at the Royal Infirmary at 9 A M on Mondays, Wednesdays, and Fridays, and gives a course of instruction in Dental Surgery on these days. The following course in the curriculum can be taken at St Mungo's College Anatomy, six months, Practical Anatomy, nine months, Physiology, six months, Chemistry, six months, Practical Chemistry with Metallurgy three months, Surgery, six months, Medicine, six months, Materia Medica, three months, Clinical Surgery, six months, Dental Surgery, six months, and attendance for two years on the dental department of the hospital The attendance on the Dental Clinic is free to students of the hospital

IRELAND

Incorporated Dental Hospital of Ireland, Lincoln-place, Dublin —All Dental Students who have passed their First Dental Examination in the Royal College of Surgeons in Ireland (or an equivalent examination or examinations) are admissible to the Clinical Instruction of the Hospital, after paying fees and subscribing to the conditions prescribed by the staff In addition to Clinical Instruction and Special Demonstrations, courses of lectures are given at the hospital on Dental Surgery and Pathology, Mechanical Dentistry, the Administration of Anæsthetics, Orthodontia, Dental Anatomy, and Dental Materia Medica Practical instruction is also given in Anæsthetics In addition to the longer courses of hospital attendance, courses of three months' duration will be given to surgeons intending to practise in the Colonies or remote country districts, or in the Army and Navy

Fees —Dental Hospital Practice (each year), £12 12s, Lectures, £6 6s, Composition Fee, £15 15s per annum In addition to the above courses registered dentists who are members of the British Dental Association will usually be permitted to take out a three months' course for a fee of 6 guineas The course in practical Dental Mechanics can be taken in the Hospital Laboratory Further particulars can be obtained from the Dean

DIPLOMAS IN STATE AND TROPICAL MEDICINE

As usual we include in the Students' Number of THE LANCET an epitome of the instruction given at various universities and centres of medical education to medical men desiring to obtain diplomas in sanitary science public health, State medicine, and tropical medicine During the war some of this work has been suspended, for both teachers and taught being already registered medical men have been required in other spheres But the public health of the country and of our colonial dependencies must be maintained, for this is one of our greatest guarantees of ultimate success in the struggle of endurance, and the machinery for the special education of public medica servants exists, as appears from what follows, and is ready to resume full activity at the earliest opportunity

Resolutions, designed with a view of ensuring "the possession of a distinctively high proficiency, scientific and practical, in all the branches of study which concern th public health" have been adopted at various times b the General Medical Council from 1902 to 1911 Certai universities and corporations grant qualifications in Tropica Medicine which have not as yet been made registrable b statute

University of Oxford —An examination, conducted partly i writing, partly *vivâ voce*, and in each subject partly practica is held in Michaelmas and Easter Terms in the followin subjects —General Hygiene, General Pathology (wit special relation to Infectious Diseases), the Laws relating t Public Health, Sanitary Engineering, Vital Statistics Th examination is in two parts, which may be taken together o separately, but Part I must be passed either before or a the same examination as Part II The fee for admission t the examination is £6 for each part Successful candidate are entitled to receive the Diploma in Public Health

The First Part of the examination will comprise (*a*) a written paper of three hours in Chemistry and Physics, (*b*) a three hours' practical and *vivâ voce* examination in Chemistry and Physics

The Second Part of the examination will consist of the following parts —(*a*) Two written papers, each of three hours, dealing with General Hygiene (including Sanitary Engineering, Vital Statistics and the Laws relating to Public Health), (*b*) a practical and *vivâ voce* examination in General Hygiene, (*c*) a written paper of three hours in Pathology and Bacteriology, and (*d*) a three hours practical and *vivâ voce* examination in Pathology and Bacteriology

Candidates in Part I of the examination will be required to produce a certificate (1) of Laboratory Work in Chemistry as applied to Hygiene

Candidates in Part II will produce the following further certificates (2) of a Practical Knowledge of the Duties, Routine and Special, of Public Health Administration, (3) of having had Practical Instruction in Bacteriology, and the Pathology of the Diseases of Animals transmissible to Man, and (4) of having attended the practice of a Hospital for Infectious Diseases at which opportunities are afforded for the study of the Methods of Administration The courses of Instruction in Chemistry applied to Hygiene and in Pathology and Bacteriology may be taken in the laboratories of any University in the United Kingdom, of any school of the University of London, of the Royal Army Medical College, of University College, Bristol, of any extramural school in Edinburgh, of Anderson's College, Glasgow, The Royal Institute of Public Health, and in any such other laboratory as may, in the case of any particular candidate be approved of by the Regius Professor of Medicine In the cases of certificates (2) and (4), the certificates shall be given in such form as shall satisfy the secretary to the Boards of Faculties that the candidate has conformed to the rules of the General Medical Council. The names of candidates must be sent to the Assistant Registrar of the University, Clarendon Building Oxford, to whom applications for any further information should be addressed

University of Cambridge —Two examinations in so much of State medicine as comprised in the functions of medical officers of health are held during the year The examination is divided into two parts and demands proficiency in all the branches of study which bear upon the duties of medical officers of health The examinations in both parts will be oral and practical as well as in writing Candidates may present themselves for either part separately or for both together at their option, but the result of the examination in the case of any candidate will not be published until he has satisfied the examiners in both parts Marks of distinction will be placed against the names of candidates who have specially distinguished themselves in either (1) general principles of hygiene, (2) bacteriology, (3) chemistry in Part I of the examination, or (4) the second part of the examination, which has reference to State Medicine and to the applications of Pathology and Sanitary Science. Every candidate will be required to pay a fee of £6 6s before admission or readmission to *either part* of the examination but candidates who have presented themselves before the year 1896 will be readmitted to either part on payment of a fee of £5 5s Candidates must before admission to either part of the examination produce evidence of having satisfied provisions (1) (2), and (3) and before admission to Part II having satisfied provision (4) above mentioned

Two Examinations in Tropical Medicine and Hygiene are conducted yearly by the State Medicine Syndicate of the University of Cambridge. The examinations are held in Cambridge early in January and in the middle of August Each examination will extend over four days

Any person whose name is on the Medical Register is admissible as a candidate to the examination provided (I) that a period of not less than 12 months have elapsed between his attainment of a registrable qualification and his admission to the examination, (II) that he produce evidence satisfactory to the Syndicate, that he has diligently studied Pathology (including parasitology and bacteriology) in relation to Tropical Diseases Clinical Medicine, and Surgery at a Hospital for Tropical Diseases and Hygiene and Methods of Sanitation applicable to Tropical Climates As evidence of study and attainments a candidate may present to the Syndicate (1) any dissertation, memoir, or other record of work carried out by himself on a subject connected with Tropical Medicine or Hygiene, (2) any Certificate or Diploma in Public Health or Sanitary Science he may have obtained from a recognised Examining Body Such evidence will be considered by the Syndicate in determining whether he is qualified for admission to the examination and by the examiners in determining whether, if admitted, he shall be included in the list of successful candidates

The examination will be partly in writing, partly oral, and partly practical and clinical (the clinical part will be conducted at a hospital for tropical diseases, at which cases will be submitted for diagnosis and comment), and will have reference to the nature, incidence, prevention, and treatment of the epidemic and other diseases prevalent in tropical countries Every candidate who passes the examination to the satisfaction of the examiners will receive from the University a diploma testifying to his knowledge and skill in tropical medicine and hygiene The fee for the examination is £9 9s, and applications should be addressed to Dr Graham Smith Medical Schools, Cambridge

All applications for further information respecting these examinations and the courses of study should be addressed to the State Medicine Syndicate, the Chemical Laboratory, Pembroke-street, Cambridge

University of London —Candidates for the M D degree may offer State medicine as a subject in which to graduate Certificates must be produced showing that a course of practical instruction has been attended for the prescribed period, and that the course has included such chemical, microscopical and meteorological work and exercises as more especially relate to sanitation The attendance includes six months' practical instruction in a laboratory and six months' instruction in public health administration under the supervision of a medical officer of health, and three months' attendance on the practice of a hospital for infectious diseases The examination consists of papers in State medicine, including hygiene, school hygiene, and forensic medicine, a paper in medicine, an essay, and a two days' practical examination. Candidates must satisfy the examiners both in the papers and in the practical tests A *vivâ voce* examination may be held at the discretion of the examiners In connexion with this degree the various metropolitan medical schools hold regular classes under teachers of Public Health and Sanitary Science, such instruction being also used to obtain the various diplomas of other Universities and of those Royal Corporations which grant them.

University of Durham —Candidates for the degree of Bachelor of Hygiene (B Hy) must be at least 22 years of age, registered and a graduate in Medicine of a recognised university They must spend six months at Newcastle-upon Tyne studying Comparative Pathology, Practical Bacteriology, Sanitary Chemistry, and Physics and have to pass an examination in Sanitary Chemistry, Physics, Comparative Pathology, Sanitary Legislation, Vital Statistics, Nosology, Climatology, Meteorology, Distribution of Health and Disease, Sanitary Medicine and Practical Hygiene The fee for the examination for the degree of B Hy is £10 10s and for the degree £6 6s Candidates for the degree of Doctor of Hygiene (D Hy) must have acquired the degree of Bachelor of Hygiene must for two years subsequently have been engaged in Public Health administration, or in research work relating to Public Health. The fee for the examination for the degree of D Hy is £5 and for the degree £6 6s The regulations for examination for the Diploma in Public Health (D P H) are the same as those for the degree of Bachelor of Hygiene except that the candidate is not required to be a graduate in Medicine of a recognised University and the course of study need not be passed at Newcastle-upon Tyne The fee for the examination is £10 10s and for the diploma £3

Victoria University of Manchester —An examination in Public Health is held twice yearly The examination is in two parts and is written oral, and practical Candidates may present themselves for Parts I and II separately or at the same time provided that no candidate be admitted to Part II unless he has already passed in Part I No candidate s name will be published until he has satisfied the examiners in both parts of the examination. The fee for each part is £5 5*s*, and must be paid on or before July 1st in each year For any subsequent examination in the same part the fee will be £3 3*s* Every candidate who has passed both parts of the examination to the satisfaction of the examiners, and who is legally registered, will receive a Diploma in Public Health The examinations will begin about the end of March and the middle of July in each year Holders of the Diploma in Public Health are eligible for examination for the Certificates in School Hygiene and Factory Hygiene after attending the prescribed periods of study and hospital practice

University of Birmingham —The University grants a degree of B Sc in Public Health and also a Diploma in the same subject on the following conditions Graduates in Medicine of this University may become candidates for the degree of Bachelor of Science in Public Health by conforming to all the requirements laid down for candidates for the Diploma in Public Health, except that after graduating in Medicine all courses of study must be taken out in the University, and they must, in addition, have attended a three months' course of Geology in the University The examinations will be held in the months of March and June and will consist of two parts, each part being written, oral, and practical No candidate will be allowed to pass Part II until he has passed Part I Candidates may enter for Parts I and II separately or at the same time The fee for each part of the examination is £5 Medical Officers of the Royal Navy who have attended courses in Hygienic Chemistry, Bacteriology, and Public Health at the Naval Medical School, Greenwich, will be admitted to the examinations for the Diploma in Public Health, whether they have previously been students at the Birmingham School or not, and the same applies to officers of the Royal Army Medical Corps who have studied Chemistry and Bacteriology at the Staff College and pursued the further course of study approved by the General Medical Council

University of Liverpool —The University grants a Degree in Hygiene (M H) and a Diploma (D P H), and every facility is afforded for training in Sanitary Science and State Medicine The curriculum for the Degree extends over a period of two years, the first of which is devoted to laboratory instruction and practical classes (including those for the Diploma), the second being devoted to advanced study and research The D P H curriculum fees are Chemistry, £5 5*s*, Bacteriology, £5 5*s*, Practical Sanitation, £15, Infectious Diseases, £3 3*s* The courses may be taken out at any time, and students are allowed to work daily in the laboratories

The University grants a Diploma in Tropical Medicine Three courses of instruction are given every year Two of these last for three full months—the Lent Course from Jan 6th to April 5th and the Autumn Course from Sept 15th to Dec 13th The Third Course, an Advanced Course, lasts one month, from June 1st to the 30th At the end of each full course an examination is held by the University for its Diploma of Tropical Medicine (D T M), which is open only to those who have been through the course of instruction of the school The examination lasts three days and consists (1) of papers on Tropical Medicine, Tropical Pathology, and Tropical Sanitation and Entomology respectively, (2) of a clinical examination, and (3) of an oral examination The advanced course consists entirely of Practical and Clinical Laboratory Work, given at the laboratory at the University The fee for the full course of instruction is 13 guineas, with an extra charge of 10*s* 6*d* for the use of a microscope if required The fee for the examination is 5 guineas Applications should be made to the Dean of the Medical Faculty, University of Liverpool Two University Fellowships of £100 a year each are open to students of the school, amongst others Accommodation for research work is to be had at the University Laboratory The Mary Kingsley Medal is awarded by the school for distinguished work in connexion with Tropical Medicine The new laboratories are completed and ready for occupation on the termination of the war

University of Leeds —The University grants a Diploma in Public Health, and every facility is afforded for training in Sanitary Science and State Medicine. The examination, which is held twice in each year—namely, in June and December—is in two parts, and is written, oral, and practical Candidates, before entering for the first part of the examination, must have held for not less than 12 months a registrable qualification in Medicine, Surgery, and Midwifery, and must present satisfactory certificates of having attended an approved course of instruction in Public Health in the University, or in a college or medical school recognised for this purpose by the University Candidates before entering the second part of the examination must present certificates of having, after obtaining a registrable qualification, attended during not less than three months the clinical and administrative practice of a hospital for infectious diseases approved by the University Candidates may present themselves for Parts I and II separately or at the same time, provided that no candidate be allowed to pass in Part II unless he has already passed in Part I Fees—The fee for each part is £5 5*s*, and for any subsequent examination in the same part £3 3*s*

University of Sheffield —The examinations for the Diploma in Public Health are open to all registered medical practitioners who have completed approved courses of study The examination shall be in two parts The subjects of the examination in Part I shall be Chemistry and Bacteriology Candidates may present themselves for examination in the subjects of Part I either separately or at the same time The subjects of the examination in Part II shall be the General Principles of Public Health, with especial reference to Epidemiology, trade diseases, sanitation, inspection of articles of food, the storage and purification of water, and the principles of drainage Parts I and II *of the examination* may be taken separately or at the same time Courses of lectures and practical instruction in the subjects of the examination are given at the University These courses may be attended by students intending to become candidates for the Diploma in Public Health of other Universities

University of Bristol —Diploma in Public Health Candidates must be at least 23 years of age, shall be fully registered medical practitioners of not less than 12 months' standing as such, and shall have passed the examination prescribed by regulation The examination is divided into two parts The subjects of the First Part are Chemistry as applied to Public Health and Pathology and Bacteriology Candidates for the First Part shall, during six months after having obtained a registrable qualification, have received practical laboratory instruction in Hygienic Chemistry, in Bacteriology, and in the *Pathology* of the Diseases of Animals Transmissible to Man. The subjects of the Second Part are Public Health and Epidemiology, Sanitary Law, Vital Statistics, and Sanitary Reporting

University of Edinburgh —Two degrees in Science in the Department of Public Health are conferred by the University of Edinburgh—viz, Bachelor of Science in Public Health and Doctor of Science in Public Health A Diploma in Tropical Medicine and Hygiene is also granted. Candidates for the degree of B Sc in Public Health must be graduates in Medicine of a recognised University, and must pass two examinations, for the first of which they must, after graduation in Medicine, have worked for at least 20 hours per week during a period of not less than eight months, of which at least five consecutive months must be in the Public Health Laboratory of the University of Edinburgh and the remainder either there or in a laboratory recognised by that University, they must also have attended courses of instruction in Physics and Geology in some Scottish University Candidates are not admitted to the Second Examination sooner than six months after having passed the First Examination, nor sooner than 18 months after having taken their degree in Medicine and they must have attended two separate courses in Public Health in some University of the United Kingdom or in such medical school or Indian, Colonial, or Foreign University as may be approved for the purpose by Edinburgh University, each course consisting of 40 lectures at least, one of which courses shall deal with medicine and the other with engineering, each in its relation to public health The subjects of examination include Laboratory work, Physics Geology, Medicine in its application to Public Health, Sanitation, Sanitary Law, and Vital Statistics Graduates who have held the degree of B Sc in Public Health from the University of Edinburgh for a term of five years may offer themselves for the degree of D Sc. in Public Health in that University They must then present a Thesis and pass an examination in Public

Health The fees are £3 3s for the First and £3 3s for the Second B Sc Examinations, and £10 10s for the degree of D Sc

University of Aberdeen —The Diploma in Public Health (D P H) is conferred only on graduates in Medicine of a University in the United Kingdom not less than 12 months after medical graduation Every candidate must produce evidence of having attended, after graduation in Medicine, during a period of six months, practical instruction in Hygiene and Bacteriology in laboratories approved of by the University, together with having during six months (whereof three months must be distinct from the period of laboratory instruction) been diligently engaged in acquiring a practical knowledge of the duties, routine and special, of Public Heath administration under the medical officer of health of a county or large urban district. He must have regularly attended for three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration He must also have obtained practical instruction in the drawing and interpretation of plans The diploma is conferred after an examination in Public Health held in March and July of each year The fee is £5 5s

University of Dublin (Trinity College).—The Diploma in Public Health is conferred, after examination, on the following conditions The candidate must be a registered medical practitioner and have obtained a registrable qualification at least nine months before the examination The candidate must have completed, subsequently to obtaining a registrable qualification, four months' practical instruction in a chemical and bacteriological laboratory or laboratories approved by the University, must have studied practically outdoor sanitary work for six months under an approved officer of health, and must have spent three months' attendance at a fever hospital where opportunities are afforded for the study of methods of administration A special prospectus and a list of recognised laboratories may be obtained by application to the Registrar of the School of Physic, Trinity College, Dublin

National University of Ireland —At this University there is a Diploma in Public Health and a B Sc in Public Health The Diploma may be granted to matriculated or non matriculated students of the University who shall have completed approved courses of study and shall have passed the prescribed examinations provided that it shall not be granted except to a registered medical practitioner Candidates may present themselves for the examination after an interval of not less than 12 months from the time of obtaining a registrable qualification The curriculum extends over a period of not less than nine calendar months Every candidate must produce a certificate that he has attended practical instruction in a laboratory, approved by the University, in Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man The examination consists of two parts, which may be passed separately or together Part I comprises the following subjects Chemistry, Meteorology and Climatology, and Sanitary Engineering and Architecture Part II comprises the following subjects Bacteriology, Hygiene, Sanitary Law, and Vital Statistics The examination in each part will be oral and practical as well as written

For the B Sc in Public Health a candidate shall not be admitted unless he (*a*) shall have received the degrees of M B , B Ch , and B A O at least one year previously, (*b*) shall have pursued an approved course of study in the Faculty of Medicine, and (*c*) shall have passed the prescribed examination In addition to D P H course the candidate will be required to take up (1) a Special Course of Pathology, (2) Bacteriology, and (3) Advanced Course in Hygiene Each of these courses lasts three months

University of Belfast —A Diploma in Public Health is given by examination Every candidate must produce evidence that, after obtaining a registrable qualification, he has during six months received practical instruction in an approved laboratory in which Chemistry, Bacteriology, and the Pathology of the diseases of animals transmissible to man are taught After obtaining a registrable qualification every candidate must produce evidence that he has attended during three months the practice of a hospital for infectious diseases at which opportunities are afforded for the study of methods of administration The examination must have extended over not less than four days, one of which shall have been devoted to practical work in a laboratory, and one to practical examination in and reporting on, subjects which fall within the special outdoor duties of a medical officer of health The examination will be held once yearly Part I in March, and Part II in June The first part of the examination will have reference to the general principles of sanitary science, and the second part to State Medicine and to the applications of Pathology and Sanitary Science The fee for each part is 1 guinea.

Royal College of Physicians of London and the Royal College of Surgeons of England —The following are the regulations for obtaining the Diploma in Public Health The examination consists of two parts The first part of the examination takes place in January, April, and July and the second part in January and July The fee for each part is £10 10s , except for those who are diplomates of the Royal Colleges, who pay £6 6s for each part A candidate intending to present himself must give 14 days' written notice to the Secretary, at the Examination Hall, Queen square, Bloomsbury, W C He will be admissible to examination in Part I on producing evidence (1) of having been in possession of a registrable qualification for at least 12 months , (2) of having attended thereafter practical instruction in a laboratory recognised by the Examining Board in England for at least 240 hours during a period of six months , and (3) of being at least 23 years of age A candidate will be admitted to Part II of the examination on producing evidence (1) of having been diligently engaged in acquiring a practical knowledge of Public Health administration during six months under certain specified conditions , (2) of having attended during three months the clinical practice of a hospital for infectious diseases , and (3) of being at least 24 years of age

The examination for the Diploma in the Diseases and Hygiene of the Tropics has been discontinued during the war

The Royal College of Physicians of Edinburgh, the Royal College of Surgeons of Edinburgh, the Royal Faculty of Physicians and Surgeons of Glasgow —All candidates for the Diploma in Public Health must have a qualification which has been registered under the Medical Acts Candidates must have attended not less than four calendar months' practical instruction in Chemistry and Bacteriology in a recognised laboratory or laboratories, must have studied outdoor sanitary work for six months under a medical officer of health or other sanitary officer , and must give evidence of attendance for three months at the practice of a Hospital for Infectious Diseases, at which he has received instruction in the methods of administration The examination consists of two parts, and candidates may enter for both at one period or for either separately The First Part includes (*a*) Laboratory Work (Chemistry and Bacteriology) (*b*) Physics and Meteorology , and the Second Examination embraces (*a*) Report on Premises visited, (*b*) Examination at Fever Hospital, (*c*) Examination at Public Abattoir (*d*) Written and Oral Examinations on Epidemiology and Endemiology, (*e*) Vital Statistics and Sanitary Law, and (*f*) Practical Sanitation. The fee is 12 guineas for both examinations, or 6 guineas for either of them A fee of 3 guineas is payable by rejected candidates for either examination The examination is held twice yearly, in May and October The published regulations provide detailed synopses of the subjects of examination The Registrar for Edinburgh is Mr D L Eadie, 50, George square, and for Glasgow Mr Walter Hurst 242 St Vincent-street

Royal College of Physicians of Ireland and Royal College of Surgeons in Ireland —Every candidate for the Diploma in Public Health must be a registered medical practitioner He must subsequently to qualification (1) receive six months laboratory instruction in Chemistry, Bacteriology, and the Diseases of Animals transmissible to man , and (2) during six months practically study outdoor sanitary work under a medical officer of health, and shall as an additional requirement attend a hospital for infectious diseases Candidates are examined on four days, commencing on the first Monday of February, May and November The examination comprises the following subjects —Hygiene, Chemistry, Meteorology and Climatology, Engineering, Vital Statistics Sanitary Law, and Bacteriology The fee for the examination is £10 10s For further particulars apply to Alfred Miller Secretary, Committee of Management , Office, Royal College of Surgeons, Dublin

Annotations.

"Ne quid nimis"

PLASTIC SURGERY IN PULMONARY TUBERCULOSIS

THE vogue of lung collapse therapy has stimulated the study of this subject, of the present state of which L Spengler[1] gives a critical survey Beginning with the work of Quincke (Bonn) and of Carl Spengler (Davos), who advocated rib resection to facilitate obliteration of chronic cavities, a real extra pleural thoracoplasty was first advocated by Brauer, in cases where the existence of pleural adhesions prevented or limited the induction of an artificial pneumothorax, and first carried out by Friedrich However, this "total" operation, besides being dangerous to life, left the thoracic wall too weak, the mediastinum flapped to and fro with the respiratory movements and circulatory disturbance was caused In order to avoid these dangers, Brauer (Hamburg) altered the plan of the operation He did not touch the tenth rib, so as to spare the attachments of the diaphragm, used local anæsthesia, and operated in two stages, compressing first the lower, and presumably more healthy, part of the lung, so as to lessen the risk of aspiration into it of sputum expelled from the apical and more diseased region This technique is the foundation of that now practised by Sauerbruch (Zürich) Sauerbruch also operates under local anæsthesia and in two stages, resecting the ribs behind ere—if that be needed—he divides them in front A paravertebral, longitudinal, hook shaped incision is used, and before closing the wound the vertebral border of the scapula is pressed under the proximal rib stumps, in order further to compress the lung Wilms's original "Pfeilerresektion" is condemned as insufficient the deviser himself has extended it until it amounts to a thoracoplasty Extra pleural thoracoplasty must, however, be suited to individual requirements, must always be preceded by an attempt to establish artificial pneumothorax, and is especially useful for basal cavities In a localised form, also, it is, of course, highly applicable to obliterate a tuberculous empyema or a partial pneumothorax space which, despite tapping, secretes chronically a thick effusion Other strictly surgical measures in use to obtain compression of (particularly apical) pulmonary tissue are pneumolysis and plugging Tuffier introduced the former procedure, resecting the second rib, and freeing extra-pleurally the pulmonary apex with a blunt dissector, and then maintaining its separation from the chest wall with nitrogen gas, or better, a fresh lipoma Baer (Davos) used as a plug paraffin vioform bismuth The drawback to plugging is, however, that the substance introduced, even a fatty tumour, may be expectorated after having ulcerated through the wall of the compressed cavity, also there is much risk of sepsis even with all care The former accident happened to Tuffier four times in 14 cases and to Sauerbruch seven times in 28 As for the more or less isolated adhesions often shown by radioscopy to limit the area of an artificial pneumothorax, these have been dealt with intrapleurally by ligature and division, and also by division with the cautery under observation with a thoracoscope They often contain caseous matter and largish blood vessels Saugman had thus a fatal case of hæmorrhage

SUBSTITUTES FOR SUGAR AND GLYCERINE

A SUGGESTION was made in THE LANCET recently that, in order to husband our inadequate supplies of sugar and medicinal glycerine, and at the same time to encourage uniformity in dispensing preparations which have hitherto contained one or other of these substances, prescribers should make it clear that they mean the prescribed medicines to contain no sugar or glycerine, as the case may be This suggestion has been adopted by the Committee which was appointed by the Home Office early in the war to consider economy in the use and distribution of drugs In a circular which has been issued to the medical profession the Committee recommends that wherever possible practitioners should order such preparations "*sine glycerino*" or "*sine sacchaio*" As a substitute for sugar as a sweetening agent a mucilage of tragacanth with chloroform (composed as follows gum tragacanth 30 grains, chloroform 40 minims, water to 10 fluid ounces) can be prescribed in suitable quantities It is worthy of note that the Pharmaceutical Society is preparing as a supplement to the British Pharmaceutical Codex a set of formulæ to replace those which have been withdrawn from the Pharmacopœia.

INSTRUCTION IN VENEREAL DISEASES

THE schemes for the diagnosis and treatment of venereal diseases now being undertaken by local authorities all through the United Kingdom are in most cases offering facilities for instruction in accordance with the recommendations of the Royal Commission on Venereal Diseases and at the express wish of the Local Government Board Circumstances have conspired to produce in the clinical schools a shortage of material on which clinical instruction in venereal diseases could be based, and the openings for both clinical and pathological work offered at the new treatment centres will be welcome to senior students and general practitioners No complete list of centres for the country generally is at present available, although few large urban areas will be without one, but in London the County Council and the City Corporation have arranged for the coöperation of certain hospitals, the complete list of which is as follows —

Charing Cross, Golden Lane (City of London), Great Northern Great Ormond street (ch), Guy's, King's College, Lock (91, Dean street, W C (m , w , ch), Harrow road, W (w , ch)), London, Middlesex, Miller General, New Women's, Royal Free, St George's, St John's (Leicester square), St Mary's, St Paul's (Red Lion square) St Thomas's, Seamen's (for merchant seamen only), South London for Women, University College, West London, and Westminster

A list of these institutions, excepting the Golden lane clinic at the City Shelter, 19–20, Golden lane which is under the City Corporation with the days and times at which the clinics are available for the use of patients, has been issued by the Public Health Department of the London County Council The pathological work of the clinic is done at the hospital to which each is attached with the exception of St Paul's Hospital and the Miller Hospital which are served respectively by the Royal Free Hospital and the Seamen's Hospital

Courses of instruction have also been held at the Military Hospital, Rochester Row, London, S W , under the direction of Lieutenant-Colonel L W Harrison, at which some hundreds of panel practitioners attended the lectures and subsequent practical demonstrations This instruction will be repeated in the coming winter if there is sufficient demand for it

IT is stated that the French Government is so satisfied with the work of the Army Medical Service its numerical importance, the quantity of its equipment, and the great scale on which it works, that the President has signed a decree declaring that it shall in future take rank with all the other branches of "the armed service"

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[1] Centralblatt für Tuberkulose-Forschung June 1917

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt R D B Frew, R.A.M C, qualified at Glasgow in 1903 and was tuberculosis officer to the County Borough of Wallasey, Cheshire, prior to joining up He formerly held appointments at the Monsall Hospital, Manchester, the Glasgow Royal Infirmary, and at the Manchester Hospital for Consumption

Capt F R Armitage, D S O, R A.M C, attached Royal Field Artillery, was educated at Cambridge University and at the London Hospital and qualified in 1903 Prior to joining up he was in practice at Wolverhampton The award of the D S O was recorded in THE LANCET of Jan 6th, 1917, p 37

Lieut A B Ross R A.M C, attached Royal Irish Rifles, qualified at Edinburgh in 1902, and was in practice at Ashton under Lyne prior to joining up He had held appointments at the Children's Hospital Great Ormond street, London, at the Royal Infirmary, Edinburgh, and at the Glasgow Maternity Hospital

Capt H Ackroyd, M.C R.A.M.C, was educated at Cambridge University and at Guy's Hospital London, and qualified in 1903 He had held appointments at the General Hospital, Birmingham, and at the David Lewis Northern Hospital Liverpool, and later took up research work at his university Prior to joining up in February, 1915, was residing at Royston Herts The award of the M C was recorded in THE LANCET of Oct 28th, 1916, p 769

Lieut. C M Atkinson, R A.M.C, attached Norfolk Regiment was a student at University College London, and qualified in 1896 Prior to joining up he was in practice at Ashford, Kent, where he was medical officer of the East Ashford Workhouse and Infectious Hospital

Died of Wounds

Capt R L Henderson, Australian A.M C, qualified at Edinburgh in 1903 and after holding an appointment at the Cumberland Infirmary, Carlisle he practised in Australia from whence he came with the Australian Expeditionary Force

Capt H D Willis R A.M C, attached Worcester Regiment, was educated at Manchester University, and qualified in 1912

Previously reported Wounded, now reported Died of Wounds

Capt C W Treherne, R A.M C, received his medical education at St Thomas s Hospital London, and qualified in 1912 He held appointments at the West London Hospital and at St Thomas s and was a medical officer of the British Red Cross Society during the Balkan War of 1912-1913

Died

Surg Capt R A Bostock R A M C, attached Scots Guards, was a student at St Bartholomew s Hospital, London and qualified in 1855 He joined the Army Medical Service in 1856 and was in retirement when he was re-employed for the war

Wounded

Capt W H Hart R A M C
Capt D J MacDougall, R A.M C attached Royal Sussex Regiment
Capt R P S Mason M C R A.M C, attached Royal Field Artillery
Capt C H L Rixon R A.M C attached Sherwood Foresters
Capt G F Graham I M S
Capt G A. Cole, R A M C
Capt O J Day M C, R A M C attached E Surrey Regt
Major J S Y Rogers D S O R A M C, attached Black Watch
Major S B Smith D S O R A M C
Capt A J Kearney R A M C
Capt H Alcock R A M C, attached Royal Warwickshire Regiment
Lieut G F Fismer R A M C
Capt A P Gray R A.M C attached Royal Field Artillery
Capt J F Rutherford R A M C attached Royal Irish Rifles
Cap I Edie N Z A M C

Missing

Capt C W Bond R A M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Second Lieut F V L Claremont, Royal Garrison Artillery, killed in action, younger son of the late Dr C C Claremont of Southsea

Capt C W Treherne, R.A.M C, *died of wounds*, son of Surg Gen Sir F H Treherne K.C M G

Capt F R Armitage D S O, R.A.M C, attached Royal Field Artillery, killed in action, eldest son of Dr J A Armitage, of Hastings

Flight Lieut C V Arnold, R N, died, only son of Capt Arnold, R A.M C of the War Hospital, Dartford

Surg Capt R A. Bostock, R A M C, attached Scots Guards, died, son of the late Surg Gen J A. Bostock, C B

Lieut L C Burnett R N, killed in action second son of Surg Gen W F Burnett, A.M S, of Richmond, Surrey

Second Lieut A W Wilson, Scots Guards, killed in action, only surviving son of the late Dr W Wilson, of Hanley, Staffs

Capt the Rev G M Evans, M C, Chaplain to the Forces killed in action only son of the late Samuel Evans, M R C S, L.R C P, of Dovercourt, Essex

Capt A. S Solly, Royal Field Artillery, killed in action, son of Major E Solly, R.A.M C, of Harrogate, and formerly mayor of the town

Major (temp Lieut Col) E A B Alston, Northamptonshire Regiment, attached Duke of Cornwall's Light Infantry, killed in action, fourth son of the late Surg Major W E Alston, of Sandgate, Kent

THE HONOURS LIST

The following awards to medical officers are announced —

K C B

Lieut Col (temp Brig Gen) Auckland Campbell Geddes, C.B, Territorial Force Reserve, Director of Recruiting

Bar to the Distinguished Service Order

Capt Eric Dalrymple Gairdner D S O, R.A.M C

For conspicuous gallantry and devotion to duty He went forward under very heavy fire to attend to a wounded N C O and was himself shot down He has consistently displayed high courage and devotion to duty and his example has been an aspiration to all ranks

(The award of the D S O was announced in THE LANCET of June 10th 1916, p 1195)

Distinguished Service Order

Temp Capt (acting Lieut Col) Charles Derwent Pye Smith, M C, R A.M C

For conspicuous gallantry and devotion to duty When in charge of an advanced dressing station his sergeant-major and the whole of his staff were killed He reorganised the work with the assistance of a lance-corporal and in consequence of his energy and presence of mind the work was not delayed. He led his bearers continually into the front line rescuing wounded under heavy shell fire, and working with great heroism for 60 hours setting a splendid example to all

Lieut Col (Temp Col) Donald Johnstone McGavin, New Zealand, M C

For conspicuous gallantry and devotion to duty While acting as A.D M S to his division the successful evacuation of the wounded during our heavy offensive was due to the thoroughness of his preparations and his personal attention to the smallest details He went into the advanced area at great personal risk to encourage the stretcher bearers and superintend the removal of casualties setting a splendid example to all ranks

Bar to the Military Cross

Capt Samuel Russell Foster, M C, R A.M C

For conspicuous gallantry and devotion to duty He showed the greatest skill and fearlessness in leading his stretcher bearers through a severe enemy barrage to evacuate wounded from our front line. His work has always been marked by utter disregard of danger and his fine example has communicated itself to his men

(The award of the Military Cross was announced in THE LANCET of Nov 27th 1915 p 1217)

Temp Capt David Hamilton Hadden, M C, R.A.M C

For conspicuous gallantry and devotion to duty Under extremely adverse weather conditions he worked without rest for three nights and two days attending wounded Throughout he showed the utmost indifference to heavy shell and machine-gun fire

(The award of the Military Cross was announced in THE LANCET of Jan. 6th 1917 p 30)

Capt Frank Graham Lescher, M C, R A M C, Spec Res

For conspicuous gallantry and devotion to duty He showed the greatest skill and fearlessness by leading his bearer parties and establishing forward collecting posts under heavy hostile shell fire He worked ceaselessly for three days by his personal example and devotion inspiring his men with courage under very difficult conditions

(The award of the Military Cross was announced in THE LANCET of Oct 28th 1916 p 770)

Military Cross

Capt Arthur Stanley Addison, New Zealand M C

For conspicuous gallantry and devotion to duty During an attack he established his dressing station and worked with the greatest devotion under heavy shell fire dealing with a great many wounded from all units in his vicinity

Capt William Aitken, New Zealand M C

For conspicuous gallantry and devotion to duty He repeatedly took his bearers through heavy hostile barrage clearing the aid posts and searching shell holes for wounded His gallantry and coolness under fire were of the highest order and a splendid example to his men

Temp Lieut Ernest Francis Rimington Alford, R A M C

For conspicuous gallantry and devotion to duty He has on all occasions shown the greatest courage and disregard for danger when attending wounded under fire and in many cases in the open

Temp Capt Charles Bannigan, R A M C

For conspicuous gallantry and devotion to duty A dug-out having been blown in at some distance from his aid post he ran to the spot at great personal risk under heavy shell fire and attended to the wounded saving one man s life His conduct on all occasions has been marked by the greatest courage and devotion

Temp Capt David Sands Brough, R A.M C

For conspicuous gallantry and devotion to duty He worked unceasingly when in charge of two bearer subdivisions Under very heavy fire he again and again led his bearers to the wounded setting a fine example to all

Capt John Cook, R A M C

For conspicuous gallantry and devotion to duty He went out under heavy shell fire attended to the wounded and carrying them to cover and setting a fine example of fearlessness and devotion

Capt Alexander Cosgrave Court, R A M C , Spec Res

For conspicuous gallantry and devotion to duty in establishing an advanced aid post and personally attending to all the wounded under heavy fire Though wounded in the hand, he carried on saving many lives and showing great courage and initiative on this as on all other occasions

Temp Capt Eric William Craig, R A M C

For conspicuous gallantry and devotion to duty During the night he repeatedly led the bearers beyond our front line under heavy fire By his example and courage he was the means of rescuing many wounded

Capt James Garfield Crawford, New Zealand M C

For conspicuous gallantry and devotion to duty He repeatedly took his bearers through heavy barrage bringing back many wounded who were lying exposed to the enemy's fire His coolness and fearlessness under heavy fire were a striking example to his men and his energy was the direct cause of many lives being saved

Capt Harry Edmund Creswell, R A.M C , Spec Res

For conspicuous gallantry and devotion to duty When casualties were very heavy he worked single-handed for 36 hours without rest. Throughout he showed complete disregard for his own personal safety

Temp Capt Alexander Dick, R A M C

For conspicuous gallantry and devotion when in medical charge of the regiment during an attack He was forced to establish his aid post in an open trench where he carried out his duties for two days and one night under heavy shell fire and in terrible weather He never left his post except to attend to wounded who could not be brought in and it was owing to his energy and heroism that the wounded were safely removed from the battlefield

Capt William Fotheringham, R A M C , Spec Res

For conspicuous gallantry and devotion to duty Finding no suitable position for an aid post in the captured lines, he established one in an open trench where he attended to the wounded for four days and nights under constant shell and gas-shell attack His courage and devotion set a fine example to all those working under him

Capt Charles Marsh Gozney, R A.M C

For conspicuous gallantry and devotion to duty in attending to the wounded under heavy shell fire By his courage and total disregard of personal danger he set a brilliant example to all around him and greatly encouraged the wounded

Temp Capt Ernest Eugène Herga, R A M C

For conspicuous gallantry and devotion to duty When in command of an advanced bearer post he displayed the greatest gallantry and skill in bringing the wounded through heavy hostile barrage twice crossing the open under machine-gun fire to rescue wounded men By his skilful organisation and great personal courage under fire the evacuation of the wounded was efficiently carried out

Capt Noel Edmund Barton Kirkwood, Australian A.M C

For conspicuous gallantry and devotion to duty He worked continuously for 90 hours attending wounded under heavy shell fire He set a most inspiring example to those around him

Temp Capt George Robertson Lipp, R A.M C

For conspicuous gallantry and devotion to duty He organised a party of bearers and went out under heavy shell fire and repaired the road which had become impossible for ambulances Later when his post was heavily shelled he remained and attended all wounded in the vicinity thus setting a splendid example to all

Capt Archibald McCausland, Canadian A M C

For conspicuous gallantry and devotion to duty At great personal risk he crawled through a small opening into a dug-out which had been blown in by hostile shell fire dressed the men there and afterwards attended to all the wounded in the locality under continuous heavy shell fire His courageous action saved the lives of several wounded men

Temp Capt Hugh Ross Macintyre, R A M C

For conspicuous gallantry and devotion to duty when in command of a bearer party He led his men repeatedly through heavy hostile barrage until all the wounded had been carried into safety He was fearless in the place of danger and by his coolness and courage he showed a splendid example to his men.

Capt Laurence Abel Mackenzie, R A.M C

For conspicuous gallantry and devotion to duty Whilst at work in a dressing station a shell came through two roofs killing and wounding five out of his party of six. Though severely shaken himself he organised the dressing station and carried on with the work under very heavy shell fire for two days showing a magnificent example of grit courage and devotion to duty under exceptionally trying circumstances

Capt Gordon Archibald Macpherson, Canadian A.M C

For conspicuous gallantry and devotion to duty in collecting and tending the wounded under heavy shell-fire His promptness and devotion in collecting stretcher cases in dug-outs when it was impossible to evacuate them at once undoubtedly saved many lives

Temp Lieut Robert Beattie Martin, R A.M C

For conspicuous gallantry and devotion to duty He showed the greatest gallantry in attending to the wounded under very heavy fire at a moment when the enemy had turned machine-guns on to them. He displayed the utmost fearlessness and skill in getting most of them away to a place of safety

Temp Capt James McDonnell, R A.M C

For conspicuous gallantry and devotion to duty When the village was being shelled a number of men were buried and badly wounded He superintended a party and worked for three-quarters of an hour and succeeded in rescuing them This task was carried out under continuous shelling

Capt Arthur Dysant Nelson, New Zealand M C

For conspicuous gallantry and devotion to duty He remained for three days continuously on duty under very heavy shell fire attending to the wounded of his own and many other units Owing to his advanced position and untiring energy many lives were saved.

Temp Capt Thomas Holmes Ravenhill, R.A.M C

For conspicuous gallantry and devotion to duty in collecting and evacuating wounded under heavy shell fire notably during a gas attack when his coolness and judgment saved very many casualties.

Temp Capt David Henry Russell, R A.M C

For conspicuous gallantry and devotion to duty when in charge of a bearer division He showed the greatest energy and complete disregard for personal safety in his untiring and successful efforts to locate the wounded and to attend to them His devotion saved many lives and on many occasions he has displayed the same gallantry under fire

Capt John Fox Russell, R A M C

For conspicuous gallantry and devotion to duty He showed the greatest courage and skill in collecting wounded men of all regiments and in dressing them under continuous shell and rifle fire.

Temp Capt Laurence Lancaster Satow, R A M C

For conspicuous gallantry and devotion to duty He established a dressing station within effective range of the enemy's position, where he attended to the wounded throughout the day and the following night under fire the whole time It was entirely owing to his disregard of danger and his devotion to duty that many of the wounded were collected and evacuated.

Capt Andrew Harvey Cameron Smith, Canadian A.M C

For conspicuous gallantry and devotion to duty Following his battalion closely in its attack he displayed the greatest courage and skill in establishing aid posts at the nearest possible points regardless of his own personal safety Though his posts were frequently under heavy shell fire the completeness of his medical arrangements, and the quickness with which aid was available, proved invaluable to the wounded His work at all times has been marked by the same devotion and gallantry

Capt Henry Joste Smith, R A M C

For conspicuous gallantry and devotion to duty He followed his battalion in the attack and attended to the wounded all day and night under very heavy fire of every description It was due to his courage and splendid devotion that so many of the wounded were brought in

Capt Ernest Talbot, R A M C , Spec Res

For conspicuous gallantry and devotion to duty as battalion medical officer Having established his aid post in a shell hole which was under direct hostile observation, he carried out his work under very heavy fire, showing wonderful organisation in his evacuation of the wounded

Capt Robert Taylor, R A M C , Spec Res

For conspicuous gallantry and devotion to duty in establishing bearer posts and an advanced dressing station under heavy shell fire It was due to his excellent arrangements that all the wounded were attended to and evacuated with the utmost regularity and despatch

Lieut Arthur Gerald Phillips Wills, R A.M C , Spec Res , attached Cheshire Regiment

For conspicuous gallantry and devotion to duty He remained at his aid post under heavy shell fire for 18 hours without rest, by his gallantry and fine example encouraging his bearers to work continuously until the last case was safely evacuated

Asst Surg John Wilson Woodsell, I S M D

For conspicuous gallantry and devotion to duty He displayed great courage and determination in tending the wounded under very heavy fire His devotion to duty saved many lives

MENTIONED IN DESPATCHES

The names of the following medical officers are mentioned a despatch, dated from the War Office, August 15th 1917, ceived from Lieut Gen Sir Stanley Maude, K C B, ommander in Chief of the Mesopotamian Expeditionary orce —

Royal Navy—Surg R G Elwell Surg F G E Hill Surg J C elly Surg J P Shorten

Staff &c.—Surg -Gen. F H Treherne C M G A.M S

A.M S—Col W H Starr Temp Col W H. Willcox, C B C M G

R A M C—Temp Capt W M. Badenoch Capt L. D Bailey Temp apt F R Barwell Capt W Bisset Lt Col J H R. Bond Capt K. Boney (Spec. Res) Maj A. H Burgess Capt (actg Lt Col.) T Burke (Spec Res) Temp Capt. H Cordner Capt F O Cowtan emp Capt R D Davy Capt L. Dunbar Temp Lt. L. W Evans emp Capt R C T Evans, Bt. Col. M H. G Fell Temp Capt. C M. eddie Temp Capt. A L. George Maj (actg Lt -Col) A. W Gibson apt. A H Grosse Capt T J Hallinan Temp. Capt. J Hewat emp Lt D H. Hutchinson Temp Lt.-Col. T P Legg Temp. Capt Macqueen Temp Capt. E W S Martin (killed), Capt J S McCombe Capt W McNaughtan Bt Maj T J Mitchell Capt W K Morrison Lt Col (actg Col) H M. Morton Temp Lt J Neligan (deceased) Lt Col A. R O Flaherty Lt (temp Capt) A. F I Patterson Capt D C Pim Spec. Res Temp Capt G Robinson Maj D S Skelton D S O Bt. Col J M. Sloan, D S O Capt E P A. Smith Capt G N Smyth Spec. Res. Temp Capt G W Spencer Temp. Capt. G W Stanley Temp Capt. N Tattersall Lt. (temp. Capt.) R R. Thompson Capt. (actg Lt -Col) W J Tobin Maj N D Walker Capt A. Watson, D S O Temp. Capt D McD Wilson Lt.-Col L. Wood Lt Col W A. Woodside

British Red Cross Society—Lt. Col J Gould

Indian Medical Service—Bt Lt -Col S Anderson Capt. O H. N Baker Temp Lt S D Billimoria, Capt. R H. Brown Bt. Lt.-Col (temp Col) G Browse Capt H Chand Maj M N Chaudhuri Maj F P Connor Maj S R Christophers C I E, Maj (actg Lt -Col.) L. J M Deas Temp Lt. A. J D'Souza Maj H Falk Maj (actg Lt Col) A B Fry Lt. Col. F W Gee Capt. (actg Lt -Col) H R B Gibson Bt Lt. Col C M Goodbody D S O Maj S R Godkin Capt C A. Godson Capt. P F Gow D S O, Maj (temp Lt Col.) J D Graham Maj (temp Lt -Col.) W H Hamilton, D S O Maj W F Harvey Maj A. W M. Harvey Capt. C G Howlett Lt. Col E V Hugo, Lt. Col. (Temp Col) G B. Irvine, C.B Capt G G James Lt.-Col T B Kelly Maj (actg Lt Col.) W D A. Keys Maj (actg Lt -Col) J O H Leicester Maj R A. Lloyd Capt. G R Lynn Capt L. H. L. MacKenzie Lt. Col. R H. Maddox Temp Lt R. C Malhotra Lt Col F O K Mell Maj H M H Melhuish; Lt. Col. H G Melville Capt S H Middleton West Capt P S Mills; Maj D Munro, Capt. A H Napier Lt Col B Nauth; Capt J J H. Nelson; Lt. Col (Temp Col.) W H Ogilvie Maj T G F Paterson Lt. Col E L. Perry Capt. J A. S Phillips Maj A. H Proctor Capt. C H Reinhold Lt. B H Singh, Capt N S Sodhi Lt. Col F H Watling, Maj T S B Williams Lt Col. (Temp Col.) C N C Wimberley

Indian Subordinate Medical Department—Senior Assist Surgs E J Archer H V Dewey H G C Mills; 1st Class Assist Surgs A. E Clarke, H J J Garrod 2nd Class Assist Surgs R A Cotton, G W Doyle P J McGrath S O Raphael 3rd Class Assist Surgs J M. M Brown J S Gloria, A. E Matthews 4th Class Assist. Surgs A. N De Monte J G Goodman R D Mason J P McGuire S W A Moul W H Thyne A. R. Underwood

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

The Parliamentary Recess

BOTH Houses of Parliament rose for the Autumn Recess on Tuesday, August 21st The Session will be resumed in October

HOUSE OF COMMONS

WEDNESDAY, AUGUST 15TH

Invalided Officers of the Indian Medical Service

Answering Sir J D REES, who asked when the new rules would be issued regarding the position of officers in the Indian Army who when invalided from active service were after three months placed on furlough pay, Mr MONTAGU (Secretary for India) said An agreement on this subject has now been reached with the War Office Officers of the Indian Army and Indian Medical Service (other than those under staff leave rules) invalided from field service will receive full pay of rank and full staff pay during the first three months, and thereafter for the next six months or for the period of their leave, whichever may be shorter full pay of rank and half staff pay of their substantive regimental or departmental appointment The new rule will take effect from Feb 17th, 1917, and officers then on leave will benefit from it

Military Hospitals in India

Mr MONTAGU informed Major DAVID DAVIES that the outbreak of the war prevented effect being given to the recommendations of the committee which under the presidency of Sir P Lukis prepared a detailed scheme for the introduction of the station hospital system for Indian troops It had now been definitely decided to introduce the station hospital system for Indian troops at the earliest possible moment For British troops in India the system had been in existence for many years

Manufacture of Artificial Limbs

Answering Major KERR-SMILEY, Mr BARNES (Minister of Pensions) stated that action was being taken to obtain details of a new process known as "Dr De Page's system for making artificial limbs" which had recently been adopted at the Belgian hospital at La Panne, and when full particulars were to hand—as it was expected they would be shortly—the matter would be considered as to whether it was advisable to apply the process to the manufacture of limbs in this country and take advantage of Dr De Page's and the Belgian authorities very kind offer to train disabled soldiers in the process of manufacture

Deductions from Pay of Naval Surgeons

Mr HOHLER asked the Secretary to the Admiralty whether, after the consideration that had now been given to the position and contracts of naval surgeons who had retired before the war with a gratuity and placed their names on an emergency list, he could state what the decision of the Admiralty was, and whether the deduction would be discontinued and the deductions made refunded —Mr MACNAMARA said in reply It has been decided not to make deductions in future from the pay of naval surgeons who had retired before the war with a gratuity and placed their names on the emergency list and that deductions already made from the pay of such officers shall be refunded

Outbreak of Typhoid in Carmarthenshire

Major DAVID DAVIES asked the President of the Local Government Board whether his attention had been drawn to the outbreak of typhoid in the Tumble district, Carmarthenshire, and to the unsatisfactory conditions of housing or sanitation in that area, and whether he would cause a public inquiry to be held with respect to the causes of this and other epidemics that frequently occurred in the locality —Mr HAYES FISHER wrote in reply One of the medical inspectors of the Local Government Board has visited the district and spent a considerable period in closely investigating this outbreak and conferring with the parties concerned He has reported that the outbreak was caused by infected milk, and he has advised the district council as to action to be taken to prevent the disease recurring The action which has been taken is, I think, likely to be more useful than a public inquiry in a case of this kind

THURSDAY, AUGUST 16TH

The Administration of the Royal Army Medical Corps

Major DAVID DAVIES asked the Under Secretary of State for War whether he could state the names and the terms of reference of the committee to be appointed to inquire into the administration of the Royal Army Medical Corps —Mr MACPHERSON replied Not at the present moment Certain people are being approached, but until their answer is received no statement can be made

Mr WATT Will the honourable gentleman see that members of this House are appointed on this committee, and will it apply to all theatres of war?—Mr MACPHERSON No I made it quite clear that the terms of reference would apply only to the largest theatre of war—namely, France I will put my honourable friend's first suggestion before the Secretary of State for War

FRIDAY, AUGUST 17TH

Medical Examinations in the Army

In the course of the debate on the motion for the autumn recess, Mr SHORTT asked the Under Secretary for War what was to be done about the recommendations contained in the special report of the Select Committee on Medical Examinations —Mr MACPHERSON stated that the matter was out of the hands of the War Office now and was being dealt with by the War Cabinet, who hoped to be able to state in a short time what action was being taken

METEOROLOGICAL READINGS

(Taken daily at 8 30 a m by Steward's Instruments)

THE LANCET Office August 22nd 1917

Date	Rain fall	Solar Radio in Vacuo	Maximum Temp Shade.	Min. Temp	Wet Bulb	Dry Bulb	Remarks
Aug 16		120	72	58	60	66	Fine
17		117	71	59	61	65	Cloudy
18	0·05	91	63	62	61	62	Raining
19	0 10	114	75	62	58	63	Cloudy
20	0·04	112	74	54	58	63	Fine
" 21		121	71	57	59	64	Cloudy
22		122	78	60	60	66	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

DEATH.

ARTHUR.—Died as prisoner of war of blood poisoning at Entelli Asia Minor Captain David Arthur M C., M B., B Sc I M S youngest son of the late Provost Arthur of Airdrie and of Mrs Arthur 2 St Stephen's avenue West Ealing

OUR CURRENT NUMBER

Being almost exclusively devoted to information especially interesting to Students we are necessarily compelled to defer the publication of communications on other important subjects

We tender our best thanks to those gentlemen who have at considerable personal trouble kindly supplied us with the returns and prospectuses upon which the information given in this Students' Number of THE LANCET *relative to the various medical examining bodies hospitals and medical schools of the United Kingdom is based We regret that in some cases however owing to proofs having been either not returned at all or too late certain inaccuracies may be found.*

MANAGER'S NOTICES.

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I —Incorporated Society of Trained Masseuses Lond.

J —Mr W Jenkin Redruth, Dr E Jackson Denver, U S A. *Journal of the American Medical Association*, Chicago; Mr G Jefferson, Manchester

K.—Dr H Cameron Kidd Bromsgrove Dr W Kirkby Heaton Moor Messrs J Kerfoot and Co Bardsley Lieut. Col E Blake Knox R A M C ; Capt T H Kelloch R A M C (T) Capt A M Kennedy, R.A M C

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O —Dr A. W Oxford, Lond. Mrs O Meara, Luton Mr G Ormsby Dublin

P —Messrs Partridge and Love Bristol Price's Patent Candle Co , Lond. Capt. D S Pracy R.A.M C ; Messrs L Pannett, Lond.; Lieut -Col. D N Parakh, I M S Peckham House, Med. Supt of Mr C H. Watts Parkinson, Knowle Mrs. C Piggott Teignmouth; Mr J Herbert Parsons Lond.

Q —Queen's University Belfast, Sec of

R —Dr V Ronchetti Milan; Mrs. L. Rayner, Lond., Capt E F Reeve R A.M C Capt. J R Rawlins R.A.M.C (T) Mr J E. Roberts, Liverpool; Rotherham Hospital and Dispensary Sec. of Mrs Roche, Rugby; Mr R V de A Redwood Rhymney Dr J L. Roberts Liverpool; Dr W C Rivers Worsboro Dale Mr F M Robinson, Stockport.

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U —University of Chicago Press, Chicago

V —Mr S C Varley Lond Prof Isidoro de la Villa Madrid

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Letters, each with enclosure, are also acknowledged from—

A.—Dr C M Allan Longton Anglo-American Pharmaceutical Co Croydon G Hely Hutchinson Almond Bath Capt A. G Anderson R.A.M C

B.—Messrs. W Browning and Co Lond Capt C W G Bryan R A.M C Lieut T Brown R A M C Dr R T Bowden Boscombe Dr E Chittenden Bridges Lond

C —Mr H A Cooper Lond Mr G W C F Clark Killough C T D

D —Mr D Douglas Bridge of Weir Capt H B F Dixon R A M C Doctor Beddgelert Dr L Drage Hatfield

F —Messrs Fannin and Co Dublin

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H.—Dr J T B Hall Ashbourne; Major F Hobday, A.V C Mr J J Hemming Margate; Messrs Humphreys Lond.

J —Major F B Jefferiss R A M C; J A

K.—Mr W V Kane Jubbulpore

L —Mr A Lees Colmonell Messrs H K Lewis and Co Lond

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P —Dr J A. Pierse Enniscorthy Miss Innes H Pearse Lond. Mr A J Pelton Tunbridge Wells Lieut. W J Purdy R A M C.

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THE

Milroy Lectures

ON

MEAT INSPECTION,

WITH SPECIAL REFERENCE TO THE DEVELOPMENTS OF RECENT YEARS

Delivered before the Royal College of Physicians of London

BY WILLIAM J HOWARTH, M D MANCH, D P H,
MEDICAL OFFICER OF HEALTH CITY OF LONDON

LECTURE III.[1]

IMPORTED MEAT

MR. PRESIDENT AND GENTLEMEN,—The annual amount of flesh meat consumed per head of the population was about 131 lb in pre-war times, of this, 59 per cent was home killed and 41 per cent. imported The division[2] of 126 lb of this total shows that in the case of beef and veal 40 3 lb was home killed and 23 3 lb imported, in the case of mutton and lamb the respective figures were 15 7 and 12 7 lb, and for pork and pig products 19 9 and 14 0 lb A comparison of the figures of the last ten years shows a tendency to increased consumption of mutton and lamb, in which the increase is mainly noted in the imported variety, and a definite reduction in the consumption of the flesh of the pig, the figures for 1900–03 showing a total consumption of 42 5 lb per head against 33 9 lb in 1912–13 The greater portion of this reduction was in the imported variety the amount of which in the years stated declined from 21·5 lb to 14 0 lb

The increased consumption of imported meat has been in progress for many years, but the character of the supply has undergone a change Prior to 1892 continental countries, chiefly Holland Denmark, and Germany, imported largely both live cattle and sheep, and cattle were received from the United States in considerable numbers The year of maximum importation was 1890, when 642,747 live cattle and 1 065 470 live sheep were imported This is in marked contrast with the year 1913, when only 12 000 cattle and less than 1000 live sheep entered the country

This decrease has resulted from orders prohibiting the importation of live animals for preventive reasons Importations from the continent were forbidden in 1882, but for some time after this cattle were permitted to be landed for slaughter from the United States Canada and the Argentine In 1900 the ports were closed to Argentine cattle, and to-day the landing of live cattle is regulated by the Foreign Animals Order of 1910, by which the landing of live animals is prohibited from the Argentine, Austria, Belgium Bolivia, Brazil Cape Colony, Chili Columbia, Denmark Ecuador France Germany, Gibraltar Greece, British, Dutch and French Guiana, Italy Malta and Mexico Natal Paraguay Portugal Russia, Sweeden, Uruguay and Venezuela The landing of swine is also prohibited from the United States Animals from countries not on the prohibited list may only be landed at Liverpool (Birkenhead) London (Deptford) Glasgow (Merklands) Bristol (Avonmouth) Cardiff (Bute Docks), and Manchester (Old Trafford)

In the United Kingdom the population during the decennium 1901–11 increased at a greater rate proportionately than did cattle and sheep, but at a lesser rate than did pigs This fact, in association with the prohibitions mentioned, might have been serious had no other way of supplementing the supplies than by means of live animals been available Discoveries, however, in connexion with the practical application of refrigeration to the meat industry proved the saving factor

In 1861[3] freezing works had been established at Sydney, New South Wales and at a luncheon on Sept 2nd, 1875, the guests were served with meat which had been kept from the June of the previous year In 1876 the *Northam*, a sailing ship fitted with freezing plant, attempted a trial shipment of frozen meat to England The venture was a failure, as the ship never started on the voyage owing to mechanical difficulties arising T C Eastman shipped the first consignment of chilled American beef to London in 1875, but various subsequent attempts to transport meat from Australia to London resulted in total failure or only partial success The *Paraguay* successfully carried 80 tons of mutton from South America to Havre in 1878, and the s s *Strathleven* successfully carried 40 tons of beef and mutton from Australia to London in 1879 Since then progress has been rapid

A summary table (XIII) will indicate the amount of meat received from the chief exporting countries engaged in the trade The figures given represent thousands of hundredweights

TABLE XIII.

Year	North America	South America	Australasia	Europe	Other countries	Total
1901	14 517	2171	2661	2470	0	21 819
1906	12,224	4511	2782	2621	0	22,139
1911	5 274	8913	4688	3476	24	22,375
1913	3 283	9640	5933	3965	10	22,831

Some idea of the actual class of meat imported and the different class of trades carried on by the various countries will best be seen from facts arranged in tabular form In Table XIV the totals are given in hundredweights for the year 1913 the information being obtained from official sources.

TABLE XIV —*Amounts of Various Classes of Meat Imported from Different Countries in 1913 (The totals represent cwts)*

Exporting country	Beef		Mutton.	Pork		Hams.	Bacon	Rabbits	Preserved otherwise than by salting	Unenumerated
	Fresh or refrigerated	Salted.		Fresh or refrigerated	Salted					
Australia ...	1 311 643	—	1 661 763	372	—	—	—	405,223	299 658	60 717
New Zealand	244 062	—	2,193 674	2,253	—	—	—	61 8[illegible]2	19 794	17 849
U S A ..	932	35 609	—	12,014	36 595	732,961	1 742,609	—	67 802	82,128
Argentina ..	6,996 696	—	1 405 632	—	—	—	—	—	154,710	313,747
Netherlands ..	1 951	—	123 048	464 204	—	—	185 215	11 636	4 562	208,932

It is obvious that a trade in food intended for human consumption of such magnitude and presenting features distinct from the trade in home killed meat would require special administrative measures to control it The special features include the results of conveyance over long distances, the influence of diseases peculiar to the country of origin, the utilisation of scraps of meat and the exportation of small unrecognisable portions which cannot be submitted to satisfactory examination in this country, the exportation of meat from which the bones have been dissected to save cost of freight, the exportation of edible offal and the character of meat which is canned or preserved in some other way before export

These facts indicate that a special system was needed and the exporting countries have generally recognised the necessity of supervising the meat before export to effect which they have instituted State inspections carried out by State appointed officials

In this country the Foreign Meat Regulations were framed and put into operation on January 1st 1909 Under these regulations foreign meat is classified into four groups—viz., Class 1 which includes (*a*) fresh, frozen or preserved meat which cannot be identified with parts of a carcass, an exception being made in the case of meat made up into sausages or some other recognised food product, (*b*) tripe, tongue, and kidneys contained in certain specified preservatives, (*c*) severed parts of a pig not bacon or ham, if not accompanied by an official certificate (this certificate has already been referred to), (*d*) severed parts of a pig in the form of bacon or ham if the lymphatic glands have been removed and if not accompanied by an official certificate, and (*e*) meat, whether from cattle or pigs, if it includes the ribs from which the pleura has been removed Class 2 includes only the entire carcass of a pig imported without the head in the natural state of attachment, or from which the lymphatic glands have been removed Class 3 includes meat in the form of severed parts of the carcass of a pig or other edible parts which does not comprise meat of Classes 1 or 2, and which is accompanied by an official certificate "Unclassed meat" is any other foreign meat not included in Classes 1, 2, or 3 Of the above groups, the meat included in Classes 1 and 2 is not allowed to be discharged for sale in this country, meat of Class 3 is approved, subject to being satisfactory on general grounds, whilst "unclassed meat" is submitted to the ordinary routine of inspection

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[1] Lectures I and II were published in THE LANCET of August 4th (p [illegible]) and 11th (p [illegible]) 19[illegible]

[2] Report o Board of Agriculture and Fisheries Vol XLVIII Part IV (Cd. 7551)

[3] A History of the Frozen Meat Trade By J T Critchell and J Raymond 1912

Definite reference in these regulations is therefore made to scrap meat and unrecognisable cuts, certain edible offal, pig carcasses, and forequarter meat stripped of the pleural lining The latter requires no further reference beyond stating that stripping of the pleura often means the removal of evidence of tuberculosis The references to the pig merely ensure that the carcass shall have been examined prior to exportation and certified to be fit for human consumption in cases where the whole carcass is not available for examination in this country, and the prohibition of removal of head or glands prevents evidence of disease being removed before exportation In the case of scrap and boneless meat a few additional observations are necessary

BONELESS AND CANNED MEAT

The least satisfactory part of the inspection of imported meat—i e satisfactory to the home inspector—is that relating to boneless meat and canned meat Scrap meat and trimmings, which are now rightly excluded from importation, were formerly received in barrels or bags, and included neck meat and rib meat cut into small pieces Boneless meat does not necessarily come within the category of scrap meat, for so long as it can be referred to a definite part of the carcass it is grouped as "unclassed meat" Ready and certain recognition of a joint has an important bearing on inspection, for unless an inspector can with certainty refer a piece of meat to a definite part of the carcass he is handicapped in his decision as to the matters to which his attention should be directed He must have a mental image of the characteristics of normal meat from that area, remember the glands to be searched for, and know whether it is a piece which carries a serous membrane This boned meat should therefore, be cut in sufficiently large pieces to show definite anatomical relationship, there must be as little mutilation as possible in removing the bones, serous membranes must not be removed, and the glands of the part left *in situ* and if possible, so positioned that they may be readily found Attention must be paid also to the packing They must be packed so as to retain as far as possible their normal shape without folding or rolling and each piece should be frozen separately

Granted that all these requirements are complied with, the position still remains unsatisfactory, and the fullest confidence requires to be placed in unknown inspectors Meat so forwarded is generally from poor quality animals, no offal is available to assist the inspector, the general appearance presented by the carcass as a whole is lacking, and much has to be taken on trust The majority of pieces are examined in the frozen state, as only a few may be thawed owing to the deterioration which follows the process even if re frozen A somewhat similar position confronts the inspector when examining tins of canned meat Little more can be done than ascertain that the contents are sterile Diseased conditions have occasionally been found by careful search of canned meat, but inspection for this purpose is not practicable It is also more probable that a "plainer" class of meat and perhaps scraps, the importation of which is prohibited in the fresh state, may be used for canning

For these reasons, and also to assist in other branches of the inspection of foreign meat, such as the oversight of the sanitary condition under which the different processes are conducted and to ensure that the regulations are observed, I consider that the Government should appoint expe inspectors to make periodical visits to the foreign abattoi and food preparation places from which food products a exported to this country It is stated in the last report the Chief Inspector of Foods to the Local Government Boa that two inspectors of the Board have been lent to the Arm to supervise the foreign canned meat supplied to the force A similar safeguard should be continued after the war in th interests of the civilian population

GENERAL OBSERVATIONS RELATING TO IMPORTED CARCASS MEAT

Carcasses arrive in this country either in the frozen c chilled state Frozen meat has been submitted to a con tinuous temperature of about 15° F, and is therefore froze solid Chilled meat has been exposed to a temperature onl 1° or 2° below freezing point, and is therefore ready for sal immediately it is removed from the chilled room It is no necessary to justify the statement that both chilled an frozen meat constitutes a satisfactory article of die which is but little, if any, inferior to the home kille variety either in the relative amount of nourishment i contains or in digestibility It is possibly somewha more digestible than the recently slaughtered home variety, since it has been satisfactorily proved that the maturation or ripening process slowly operates whilst the carcass is in the chilled condition and perhaps even whilst in the frozen [4] The chief differences between home-killed and imported meat are due to physical changes the result of the process to which the meat is subjected. Apart from the details of dressing the carcass, chilled meat may differ very little from that of home killed It is more readily distinguished from frozen meat, but this distinction becomes progressively less if the temperature to which it has been exposed has been lower than 29° F The fat of chilled meat often assumes a pinkish hue owing to staining with the meat juices, which compares with the yellowish white colour of the fat of home-killed carcasses There is also some roughening of the tissues due to the friction of transportation The bundles of meat fibre assume a dull slate colour and on section the meat shows some excess of moisture which is most apparent on pressure These are really refinements of distinction, and it requires a very skilled person to state with certainty in some cases that a small joint is from a chilled carcass and not from a home-killed animal

Frozen meat is more readily recognised The carcass presents an unfinished appearance, the fat is dead white in colour, rigid, and in varying degree rough and ragged. Unless previously thawed the outside of the carcass will be found covered with moisture condensed from the atmosphere On section the muscular tissue will be found uniformly light in colour, which gives it a washed-out appearance It is moister than either home killed or chilled meat, and the extent of this exudation will depend upon the care displayed in thawing The exposed surfaces of the sawn bones are white in frozen meat, whereas in chilled, if from young good quality animals, they may retain the rose-tinted appearance of home-killed animals

The chief objections to these refrigerated carcasses are that the moist condition of the flesh and the previous process of maturation which they have undergone render them liable to putrefactive changes sooner than home killed carcasses, and in the case of frozen meat that the thawing process unless satisfactorily performed results in the loss of much of the valuable meat juices

The first of these objections is countered by ordinary methods of administration. The wholesale butcher keeps his supply in cold stores until he requires it for transmission to the retailer, and the retailer simply buys what he knows he can sell in the period during which the meat keeps in satisfactory condition or he may have a refrigerating chamber in which he keeps his stock, only bringing out his supply for sale as he requires it

The loss of meat juices from frozen meat is of greater importance but a knowledge of the circumstances which cause it will undoubtedly lessen the risk. It has been stated that in the process of freezing, the muscular fibres are lacerated by the ice spicules which form, and that on thawing, the moisture which exudes is due to the escape of the liquid contents of the muscle fibres This, however, does not appear to be the case Richardson[5] has satisfactorily shown that the water freezes outside the cell and not inside The ice thus formed occupies as much or more space than did the muscle fibres, and these as a consequence of the freezing process become isolated and distorted If meat in this condition be quickly thawed, the fibres are not able to re-absorb the liquid as quickly as it reassumes the fluid state, and therefore it exudes from any cut surface On the other hand, if the thawing is done slowly a considerable amount of the juice is reabsorbed and the extent of the moisture observed on the cut surface of a thawed joint depends upon the completeness or otherwise of this reabsorption The rapidity of reabsorption depends to some extent on the temperature at which the meat has been carried. At very low temperatures considerable distortion of the fibres results and they do not so easily regain their shape as those which have been frozen at higher temperatures The practical application of this fact is that meat carried at very low temperatures should be thawed much more slowly than that carried at higher temperatures

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[4] M Muller: Zeitschrift für Fleisch und Milch Hygiene 1903-4, p 217

This question of permanent damage to the muscular fibres is obviously of some importance, since loss of fluid means loss of valuable proteids, extractives, and salts Fortunately there does not appear to be permanent damage, and, as suggested by Richardson, the process seems analogous to that which takes place when plants are frozen, in which case water freezes outside the cell in a state of considerable purity and not within Such freezing does not necessarily kill the plant, especially if the subsequent thawing is slow Experiments on animals would also indicate that the freezing of animal tissue does not necessarily result in serious damage to the cellular elements, or death would ensue in those cases where fish frozen in ice and submitted to a temperature of – 15° C , and frogs frozen in ice, have regained their vitality on slowly thawing

It follows, therefore, that the defrosting process should be conducted with due regard to the above requirements, and although many attempts have been made to devise mechanical means which would prove satisfactory, such as forcing air by means of a fan through the thawing rooms at progressively increasing temperatures, or the removal of frost and moisture by heated pipes, traders generally do not favour special means, since they take a few days to carry out and add to the cost of the meat In the Nelson system the cold pipes of the ammonia expansion process provide a surface on which moisture is deposited, and steam pipes are used to generate the necessary warmth to thaw the carcasses The steam pipes are placed under gratings in the floor and the cold pipes behind screens on the side walls The space behind the screen is open above and below Hot air rises between the carcasses, and a current is established which results in the warm moist air passing over the cold pipes The moisture is deposited on the pipes in the form of snow, and the cold air falls to be re-warmed by the hot pipes and again rises between the carcasses Meat thawed by this process is certainly dry and of good colour

THE REGULATION OF COLD STORES

In view of the fact that imported meat arrives in this country in shiploads, and that the supply is therefore often larger than that required for immediate sale, it is necessary for traders to provide themselves with cold stores in which the meat may be kept in condition until it is required for sale The increase in the number of cold stores is a feature of the present-day wholesale meat trade Many large retailers have also equipped themselves with this desirable accessory In many instances the management of these stores leaves nothing to be desired , in others however considerable improvement could be effected

Sanitary supervision is becoming increasingly a matter of importance Dirt or unsuitable substances deposited in cold stores results in objectionable consequences just as surely as do similar conditions in premises devoted to the storage of fresh meat The necessity for supervision is greater in public than in private stores Public stores may be used on the basis of separate parcels being deposited and a change made varying with the bulk and nature of the goods brought in, or stores may be subdivided and larger or smaller compartments given over for private use by special arrangement When many persons use a store there cannot be the same care displayed as when the stores are under single administration The common use of stores does not tend to improve either cleanliness or the maintenance of regular temperatures

Cold stores should be well lighted by electric means , not only for supervision, but to enable work to be done under the best conditions Some differentiation of goods deposited is also necessary Mixed goods such as poultry, eggs, fish, cheese, and the like should not be placed in compartments containing meat, and in meat stores the drier carcasses should be separate from the moister offal Provision should be made for adequate drainage or for frequent removal of offal drainage

Goods which are deposited in the stores should be in such a state that they are fit for refrigeration Putrefaction is considerably masked by freezing, and no goods except absolutely fresh material free from any mustiness should be admitted In addition, the removal of frozen goods for sale and the consequent thawing should be sufficient to justify objection being taken to the readmission of such goods with only rare exceptions This matter of admission of products into stores, and the fact that freezing masks decomposition, demand that definite responsibility shall devolve upon someone to ensure that stores are used in a proper manner, and to safeguard the public against cold stores being used to help in getting rid of products which are in an unsatisfactory condition How far responsibility attaches at present to other than the owner of unsound goods so deposited is not clear, but in public stores in which odd products are deposited it seems reasonable to require that the proprietors should be equally responsible with the owner of the goods as regards their condition, and where separate compartments are reserved the sub tenant should be responsible for his own goods, and likewise be joined in any responsibility which may devolve upon an owner to whom he grants facilities to store goods in his compartment

It would much help local authorities if definite regulations were framed dealing with these and other matters and perhaps annual registration of ownership of cold stores, with submitted lists of sub-tenants in places where compartments are hired, would prove of service Registers should be kept of the date of all goods admitted and discharged, and such should be available for inspection by the sanitary authority In certain of the United States a time-limit is placed by law on the period during which goods may remain in cold stores In certain instances provision is made for extension of the time, in others the period is absolute In some States, also, all goods are required to be stamped with the date of admission In the present position of our knowledge, it is impossible to fix a period beyond which retention in store should justify destruction and which would operate equitably all round As regards stamping the goods, there is perhaps something more to be said in favour, but it cannot serve any very practical purpose , probably the fact that it would indicate that goods were deposited in season is the best reason A register of admissions and discharges would meet most of the sanitary requirements and present no administrative difficulty Free admission to the stores and to the different compartments and passages should at all times be granted to authorised sanitary officers

THE INSPECTION OF IMPORTED CARCASS MEAT

As in the case of imported edible offal and boneless meat, inspection as to "condition" is a more essential requirement in the case of carcass meat than is the subject of disease By condition is meant not the qualities which the breeder considers when deciding whether an animal is fit for slaughter but the condition of the meat on arrival in this country It is obvious that if the temperature to which the meat is exposed has been allowed to rise above a point at which decomposition changes may take place, the meat may be rendered either wholly or in part unfit for human consumption Condition in this sense is not easily recognised whilst carcasses are in the frozen state, but indications that all is not well may be gathered from the state of the covers when the cargo is being discharged A kind of muslin cover is placed over frozen carcasses after they are frozen in which condition the carcasses are dry It follows therefore, that if no thawing afterwards takes place there will be a minimum of staining by blood juices of these covers, and they will be a carcass, an exception being made in the case of meat made up into sausages or some other recognised food product, (*b*) tripe, tongue, and kidneys contained in certain specified preservatives, (*c*) severed parts of a pig not bacon or ham, if not accompanied by an official certificate (this certificate has already been referred to), *(d) severed parts of* a pig in the form of bacon or ham if the lymphatic glands have been removed and if not accompanied by an official certificate, and (*e*) meat, whether from cattle or pigs, if it includes *the ribs from which the pleura has been removed* Class 2 includes only the entire carcass of a pig imported without the head in the natural state of attachment, or from which the lymphatic glands have been removed Class 3 includes meat in the form of severed parts of the carcass of a pig or other edible parts which does not comprise meat of Classes 1 or 2, and which is accompanied by an official certificate "Unclassed meat" is any other foreign meat not included in Classes 1, 2, or 3 Of the above groups, the meat included in Classes 1 and 2 is not allowed to be discharged for sale in this country, meat of Class 3 is approved, subject to being satisfactory on general grounds, whilst "unclassed meat" is submitted to the ordinary routine of inspection

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[5] The Cold Storage of Beef and Poultry By W D Richardson chairman Chicago Section American Chemical Society First International Congress of Refrigeration

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Sanitary supervision is becoming increasingly a matter of importance Dirt or unsuitable substances deposited in cold stores results in objectionable consequences just as surely as do similar conditions in premises devoted to the storage of fresh meat The necessity for supervision is greater in public than in private stores Public stores may be used on the basis of separate parcels being deposited and a change made varying with the bulk and nature of the goods brought in or stores may be subdivided and larger or smaller compartments given over for private use by special arrangement When many persons use a store there cannot be the same care displayed as when the stores are under single administration The common use of stores does not tend to improve either cleanliness or the maintenance of regular temperatures

Cold stores should be well lighted by electric means, not only for supervision, but to enable work to be done under the best conditions Some differentiation of goods deposited is also necessary Mixed goods such as poultry, eggs, fish, cheese, and the like should not be placed in compartments containing meat, and in meat stores the drier carcasses should be separate from the moister offal Provision should be made for adequate drainage or for frequent removal of offal drainage

Goods which are deposited in the stores should be in such a state that they are fit for refrigeration Putrefaction is considerably masked by freezing, and no goods except absolutely fresh material free from any mustiness should be admitted In addition, the removal of frozen goods for sale and the consequent thawing should be sufficient to justify objection being taken to the readmission of such goods with only rare exceptions This matter of admission of products into stores, and the fact that freezing masks decomposition, demand that definite responsibility shall devolve upon someone to ensure that stores are used in a proper manner, and to safeguard the public against cold stores being used to help in getting rid of products which are in an unsatisfactory condition How far responsibility attaches at present to other than the owner of unsound goods so deposited is not clear, but in public stores in which odd products are deposited it seems reasonable to require that the proprietors should be equally responsible with the owner of the goods as regards their condition, and where separate compartments are reserved the sub tenant should be responsible for his own goods and likewise be joined in any responsibility which may devolve upon an owner to whom he grants facilities to store goods in his compartment

It would much help local authorities if definite regulations were framed dealing with these and other matters and perhaps annual registration of ownership of cold stores, with submitted lists of sub-tenants in places where compartments are hired, would prove of service Registers should be kept of the date of all goods admitted and discharged, and such should be available for inspection by the sanitary authority In certain of the United States a time-limit is placed by law on the period during which goods may remain in cold stores In certain instances provision is made for extension of the time, in others the period is absolute In some States, also, all goods are required to be stamped with the date of admission In the present position of our knowledge, it is impossible to fix a period beyond which retention in store should justify destruction and which would operate equitably all round As regards stamping the goods, there is perhaps something more to be said in favour, but it cannot serve any very practical purpose, probably the fact that it would indicate that goods were deposited in season is the best reason A register of admissions and discharges would meet most of the sanitary requirements and present no administrative difficulty Free admission to the stores and to the different compartments and passages should at all times be granted to authorised sanitary officers

THE INSPECTION OF IMPORTED CARCASS MEAT

As in the case of imported edible offal and boneless meat inspection as to "condition" is a more essential requirement in the case of carcass meat than is the subject of disease By condition is meant not the qualities which the breeder considers when deciding whether an animal is fit for slaughter but the condition of the meat on arrival in this country It is obvious that if the temperature to which the meat is exposed has been allowed to rise above a point at which decomposition changes may take place, the meat may be rendered either wholly or in part unfit for human consumption Condition in this sense is not easily recognised whilst carcasses are in the frozen state, but indications that all is not well may be gathered from the state of the covers when the cargo is being discharged A kind of muslin cover is placed over frozen carcasses after they are frozen in which condition the carcasses are dry It follows therefore that if no thawing afterwards takes place there will be a minimum of staining by blood juices of these covers, and they will be a carcass, an exception being made in the case of meat made up into sausages or some other recognised food product, (*b*) tripe, tongue, and kidneys contained in certain specified preservatives, (*c*) severed parts of a pig not bacon or ham, if not accompanied by an official certificate (this certificate has already been referred to), (*d*) severed parts of a pig in the form of bacon or ham if the lymphatic glands have been removed and if not accompanied by an official certificate, and (*e*) meat, whether from cattle or pigs, if it includes the ribs from which the pleura has been removed Class 2 includes only the entire carcass of a pig imported without the head in the natural state of attachment, or from which the lymphatic glands have been removed Class 3 includes meat in the form of severed parts of the carcass of a pig or other edible parts which does not comprise meat of Classes 1 or 2 and which is accompanied by an official certificate "Unclassed meat" is any other foreign meat not included in Classes 1, 2, or 3 Of the above groups, the meat included in Classes 1 and 2 is not allowed to be discharged for sale in this country, meat of Class 3 is approved, subject to being satisfactory on general grounds, whilst "unclassed meat" is submitted to the ordinary routine of inspection

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[5] The Cold Storage of Beef and Poultry By W D Richardson chairman Chicago Section American Chemical Society First International Congress of Refrigeration

Definite reference in these regulations is therefore made to scrap meat and unrecognisable cuts, certain edible offal, pig carcasses, and forequarter meat stripped of the pleural lining The latter requires no further reference beyond stating that stripping of the pleura often means the removal of evidence of tuberculosis The references to the pig merely ensure that the carcass shall have been examined prior to exportation and certified to be fit for human consumption in cases where the whole carcass is not available for examination in this country and the prohibition of removal of head or glands prevents evidence of disease being removed before exportation In the case of scrap and boneless meat a few additional observations are necessary

Boneless and Canned Meat

The least satisfactory part of the inspection of imported meat—i e satisfactory to the home inspector—is that relating to boneless meat and canned meat. Scrap meat and trimmings, which are now rightly excluded from importation, were formerly received in barrels or bags, and included neck meat and rib meat cut into small pieces Boneless meat does not necessarily come within the category of scrap meat, for so long as it can be referred to a definite part of the carcass it is grouped as "unclassed meat" Ready and certain recognition of a joint has an important bearing on inspection, for unless an inspector can with certainty refer a piece of meat to a definite part of the carcass he is handicapped in his decision as to the matters to which his attention should be directed He must have a mental image of the characteristics of normal meat from that area, remember the glands to be searched for, and know whether it is a piece which carries a serous membrane This boned meat should therefore, be cut in sufficiently large pieces to show definite anatomical relationship, there must be as little mutilation as possible in removing the bones, serous membranes must not be removed, and the glands of the part left *in situ* and, if possible, so positioned that they may be readily found Attention must be paid also to the packing They must be packed so as to retain as far as possible their normal shape without folding or rolling and each piece should be frozen separately

Granted that all these requirements are complied with, the position still remains unsatisfactory, and the fullest confidence requires to be placed in unknown inspectors Meat so forwarded is generally from poor quality animals, no offal is available to assist the inspector, the general appearance presented by the carcass as a whole is lacking, and much has to be taken on trust The majority of pieces are examined in the frozen state, as only a few may be thawed owing to the deterioration which follows the process even if re frozen A somewhat similar position confronts the inspector when examining tins of canned meat Little more can be done than ascertain that the contents are sterile. Diseased conditions have occasionally been found by careful search of canned meat, but inspection for this purpose is not practicable. It is also more probable that a "plainer" class of meat and perhaps scraps, the importation of which is prohibited in the fresh state, may be used for canning

For these reasons, and also to assist in other branches of the inspection of foreign meat, such as the oversight of the sanitary condition under which the different processes are conducted and to ensure that the regulations are observed, I consider that the Government should appoint expert inspectors to make periodical visits to the foreign abattoirs and food preparation places from which food products are exported to this country It is stated in the last report of the Chief Inspector of Foods to the Local Government Board that two inspectors of the Board have been lent to the Army to supervise the foreign canned meat supplied to the forces. A similar safeguard should be continued after the war in the interests of the civilian population

General Observations Relating to Imported Carcass Meat

Carcasses arrive in this country either in the frozen or chilled state Frozen meat has been submitted to a continuous temperature of about 15° F, and is therefore frozen solid. Chilled meat has been exposed to a temperature only 1° or 2° below freezing point, and is therefore ready for sale immediately it is removed from the chilled room It is not necessary to justify the statement that both chilled and frozen meat constitutes a satisfactory article of diet which is but little, if any, inferior to the home-killed variety either in the relative amount of nourishment it contains or in digestibility It is possibly somewhat more digestible than the recently slaughtered home variety, since it has been satisfactorily proved that the maturation or ripening process slowly operates whilst the carcass is in the chilled condition and perhaps even whilst in the frozen [4] The chief differences between home-killed and imported meat are due to physical changes the result of the process to which the meat is subjected Apart from the details of dressing the carcass, chilled meat may differ very little from that of home-killed It is more readily distinguished from frozen meat, but this distinction becomes progressively less if the temperature to which it has been exposed has been lower than 29° F The fat of chilled meat often assumes a pinkish hue owing to staining with the meat juices, which compares with the yellowish white colour of the fat of home-killed carcasses There is also some roughening of the tissues due to the friction of transportation The bundles of meat fibre assume a dull slate colour, and on section the meat shows some excess of moisture which is most apparent on pressure. These are really refinements of distinction and it requires a very skilled person to state with certainty in some cases that a small joint is from a chilled carcass and not from a home-killed animal

Frozen meat is more readily recognised The carcass presents an unfinished appearance, the fat is dead white in colour, rigid, and in varying degree rough and ragged Unless previously thawed the outside of the carcass will be found covered with moisture condensed from the atmosphere On section the muscular tissue will be found uniformly light in colour, which gives it a washed-out appearance It is moister than either home killed or chilled meat and the extent of this exudation will depend upon the care displayed in thawing The exposed surfaces of the sawn bones are white in frozen meat, whereas in chilled, if from young good quality animals, they may retain the rose-tinted appearance of home killed animals

The chief objections to these refrigerated carcasses are that the moist condition of the flesh and the previous process of maturation which they have undergone render them liable to putrefactive changes sooner than home-killed carcasses, and in the case of frozen meat that the thawing process unless satisfactorily performed results in the loss of much of the valuable meat juices

The first of these objections is countered by ordinary methods of administration The wholesale butcher keeps his supply in cold stores until he requires it for transmission to the retailer, and the retailer simply buys what he knows he can sell in the period during which the meat keeps in satisfactory condition or he may have a refrigerating chamber in which he keeps his stock, only bringing out his supply for sale as he requires it

The loss of meat juices from frozen meat is of greater importance, but a knowledge of the circumstances which cause it will undoubtedly lessen the risk. It has been stated that in the process of freezing, the muscular fibres are lacerated by the ice spicules which form, and that on thawing, the moisture which exudes is due to the escape of the liquid contents of the muscle fibres This, however, does not appear to be the case Richardson[5] has satisfactorily shown that the water freezes outside the cell and not inside The ice thus formed occupies as much or more space than did the muscle fibres, and these as a consequence of the freezing process become isolated and distorted If meat in this condition be quickly thawed, the fibres are not able to re-absorb the liquid as quickly as it reassumes the fluid state, and therefore it exudes from any cut surface On the other hand, if the thawing is done slowly a considerable amount of the juice is reabsorbed and the extent of the moisture observed on the cut surface of a thawed joint depends upon the completeness or otherwise of this reabsorption The rapidity of reabsorption depends to some extent on the temperature at which the meat has been carried At very low temperatures considerable distortion of the fibres results and they do not so easily regain their shape as those which have been frozen at higher temperatures The practical application of this fact is that meat carried at very low temperatures should be thawed much more slowly than that carried at higher temperatures

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[4] M Muller *Zeitschrift für Fleisch und Milch Hygiene*, 1903-4 p 217

This question of permanent damage to the muscular fibres is obviously of some importance, since loss of fluid means loss of valuable proteids, extractives, and salts Fortunately there does not appear to be permanent damage, and, as suggested by Richardson, the process seems analogous to that which takes place when plants are frozen, in which case water freezes outside the cell in a state of considerable purity and not within Such freezing does not necessarily kill the plant, especially if the subsequent thawing is slow Experiments on animals would also indicate that the freezing of animal tissue does not necessarily result in serious damage to the cellular elements, or death would ensue in those cases where fish frozen in ice and submitted to a temperature of −15° C, and frogs frozen in ice, have regained their vitality on slowly thawing

It follows, therefore, that the defrosting process should be conducted with due regard to the above requirements, and although many attempts have been made to devise mechanical means which would prove satisfactory, such as forcing air by means of a fan through the thawing rooms at progressively increasing temperatures, or the removal of frost and moisture by heated pipes, traders generally do not favour special means, since they take a few days to carry out and add to the cost of the meat. In the Nelson system the cold pipes of the ammonia expansion process provide a surface on which moisture is deposited, and steam pipes are used to generate the necessary warmth to thaw the carcasses The steam pipes are placed under gratings in the floor and the cold pipes behind screens on the side walls The space behind the screen is open above and below Hot air rises between the carcasses, and a current is established which results in the warm moist air passing over the cold pipes The moisture is deposited on the pipes in the form of snow and the cold air falls to be re-warmed by the hot pipes and again rises between the carcasses Meat thawed by this process is certainly dry and of good colour

THE REGULATION OF COLD STORES

In view of the fact that imported meat arrives in this country in shiploads, and that the supply is therefore often larger than that required for immediate sale, it is necessary for traders to provide themselves with cold stores in which the meat may be kept in condition until it is required for sale The increase in the number of cold stores is a feature of the present-day wholesale meat trade Many large retailers have also equipped themselves with this desirable accessory In many instances the management of these stores leaves nothing to be desired, in others, however considerable improvement could be effected

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It would much help local authorities if definite regulations were framed dealing with these and other matters and perhaps annual registration of ownership of cold stores, with submitted lists of sub-tenants in places where compartments are hired, would prove of service Registers should be kept of the date of all goods admitted and discharged, and such should be available for inspection by the sanitary authority In certain of the United States a time limit is placed by law on the period during which goods may remain in cold stores In certain instances provision is made for extension of the time, in others the period is absolute In some States, also, all goods are required to be stamped with the date of admission In the present position of our knowledge, it is impossible to fix a period beyond which retention in store should justify destruction and which would operate equitably all round As regards stamping the goods, there is perhaps something more to be said in favour, but it cannot serve any very practical purpose, probably the fact that it would indicate that goods were deposited in season is the best reason A register of admissions and discharges would meet most of the sanitary requirements and present no administrative difficulty Free admission to the stores and to the different compartments and passages should at all times be granted to authorised sanitary officers

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As in the case of imported edible offal and boneless meat, inspection as to "condition" is a more essential requirement in the case of carcass meat than is the subject of disease By condition is meant not the qualities which the breeder considers when deciding whether an animal is fit for slaughter but the condition of the meat on arrival in this country It is obvious that if the temperature to which the meat is exposed has been allowed to rise above a point at which decomposition changes may take place, the meat may be rendered either wholly or in part unfit for human consumption Condition in this sense is not easily recognised whilst carcasses are in the frozen state, but indications that all is not well may be gathered from the state of the covers when the cargo is being discharged A kind of muslin cover is placed over frozen carcasses after they are frozen in which condition the carcasses are dry It follows therefore, that if no thawing afterwards takes place there will be a minimum of staining by blood juices of these covers, and they will be practically non adherent, which would not be the case if re-freezing has followed thawing At the port of entry it is impracticable to examine every carcass, but in any particular consignment a breakdown will probably affect a considerable proportion of all carcasses, so that an examination of, say, 10 per cent will give a reliable indication as to the condition of the whole The question of disease generally arises when the carcass is being cut up either in the wholesale market or in butchers' shops

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[5] The Cold Storage of Beef and Poultry By W D Richardson chairman Chicago Section American Chemical Society First International Congress of Refrigeration

Breakdowns in machinery will always occur, but with improvements in refrigeration plant and the special equipment of vessels for meat transportation these are becoming less frequent

In the earlier days of the trade much difficulty was experienced from the formation on carcasses of moulds These deposits were of various kinds, some being the usual superficial growths of mucor or penicillium, whilst others formed in the superficial tissue in the form of spots of various colours belonging to the saccharomyces and oidium and other groups To some extent there is a relation between temperature and their formation, since moulds are known to grow at temperatures round about freezing point, moulds and defective condition are, therefore, not infrequently associated Moulds however, will not develop without original contamination, and this problem has been almost solved by rigid attention to elementary cleanliness in the slaughtering places, the chill rooms, the holds of ships, the transporting vans, and the cloths which enclose the carcasses and the cleanliness of those who handle the meat, and in the case of offal, improvements in the method of packing

To effect surface disinfection of meat the Linley process was invented This consists of a method whereby air charged with formalin vapour is passed into the freezing or chilling room After remaining for a time the formalin is replaced by cold air which has been dried by passing over calcium chloride and purified by being forced over zinc plates moistened with sulphuric acid In the early days of this process exception was taken to the use of formaldehyde vapour owing to the fact that it could be shown that formaldehyde penetrates into meat so treated to varying depths In the first 5 mm of muscular tissue unprotected by fat it was found to the amount of 1 in 3500 and in the second 5 mm to 1 in 10,000 Dr G S Buchanan,[6] reporting on the subject, suggested that importers and traders concerned should consider whether the disinfection by formaldehyde should not be limited to the disinfection of the hold before the introduction of the meat

The process is now used somewhat differently from what was then the practice The chilling room at the place of slaughter is filled with the carcasses of that day's killing, generally to the number of 125 to 155 The temperature of the chamber before commencing to fill is brought down to 42° F It rises during filling to from 50° to 65° This is reduced to the chilling temperature, i e, somewhat below 32° F, in from 28 to 36 hours Formalin vapour is introduced into the chill room at the higher temperature, and the meat is left exposed to it for from 40 minutes to one hour No refrigeration takes place in this interval The cold air circulation is then set in operation and dried and cleaned air is then passed through the chamber The meat is held up in the chill room until the time comes for exportation, and dried and cleaned air is afterwards passed through the chamber for 30 minutes every 24 hours Originally the holds on the steamers were formalised, but that is not now the case The chill rooms on the steamer are filled with carcasses, and afterwards only the dry clean air is passed through for periods of 30 minutes every day Formerly one ounce of 40 per cent formaldehyde to every 100 cubic feet of atmosphere was vaporised, but now the amount is 1 to 300

BONE TAINT

A subject which may properly be referred to under "condition" is the objectionable defect known as bone taint Although not so frequently met with as formerly, it is still a cause of condemnation of imported carcasses. On occasions quite a considerable number of quarters so affected are discovered but fairly lengthy periods may elapse during which only odd instances are noted

This defect is characterised by deep-seated putrefactive changes in the thick muscles in the neighbourhood of the hip and shoulder joints, chiefly the former There are no external appearances which would suggest the presence of putrefaction, and it is most frequently observed in the primest animals, and particularly in those slaughtered during the summer months The condition is found on sectioning the carcass or by exploring with a skewer in chilled and an augur and bit in frozen carcasses

The cause has been variously assigned to putrefaction of the joint-oil, the conveyance of organisms by the blood during life, the retention of animal heat, &c My own observations lead me to the conclusion that the condition is often due to the insuction of putrefactive micro-organisms into the large blood vessels at the time of dressing the carcass That excessive fatigue may be a cause of bone taint has long been recognised It appears undoubted that the usually sterile blood may contain organisms in certain circumstances This happens after excessive fatigue In such cases organisms capable of giving rise to offensive putrefaction may exist in the blood vessels at the time of slaughter, and taint might therefore arise in those situations where the animal heat is maintained for a sufficiently long period Those cases of bone taint, however, to which reference is here made, appear more likely to result from external contamination as suggested The inherent animal heat is sufficient to maintain the vitality of such organisms for several days, and the desirable temperature is continued for a longer period in animals which are in the primest condition and show the thickest layer of fat. Summer heat helps, inasmuch as there are probably more of these organisms air borne in summer than in other months and perhaps because in the preliminary few hours wait of the carcasses for chilling the heat does not leave the carcass so rapidly as in colder months

Examination of the large arteries in the affected part shows that the internal lining membrane is foul and discoloured for a length of three inches or more in the deepest parts of the joint, and I have seen as many as three centres on the same side The veins do not show the change, or if so only in lesser degree Once putrefactive organisms are deposited within the artery they continue to develop until checked by the cold, and the offensiveness thus generated appears to be retained and only released on cutting into the part Dr Andrewes, bacteriologist for the City of London, who has examined these dissected specimens bacteriologically, reports the presence of several organisms In one case he found *Proteus zenkeri* and forms of *Bacillus coli* (not *communis*) and *B lactis aerogenes* There were no anaerobic organisms detected The lining membrane of the artery contained an abundance of these organisms The surrounding tissue contained similar organisms except that the proteus was absent and the numbers of those found were much more sparse than in the arteries In other cases flesh from the offensive area was found practically free from organisms and the hip-joint contents were sterile

It is not difficult to see how organisms may reach the deeper blood vessels By the act of bleeding the arteries are emptied of blood and reflex contractions of the muscles submit them to compression On relaxation of the pressure the elastic arteries dilate and air containing organisms will be sucked in When the main arteries are divided in the pelvis at the time of dressing only a few inches separate the cut end from the localities where the putrefaction arises As it takes several days for carcases to freeze completely or even to chill thoroughly in the deeper parts there is ample time for development to take place in the deep parts of these carcasses, particularly in those containing the thickest amount of tissue

The condition as stated is not now so frequently observed as formerly, but if it is desired to eliminate the defect completely ligature of the artery before division, which division should be on the aorta side of the ligature would probably prove effective and would not be difficult to arrange

ORANGE COLOURED STREAKS IN THE FAT OF IMPORTED CARCASSES

A physiological condition which, therefore, cannot be described under either "condition" or "disease" is met with in certain imported carcasses It is characterised by the presence of well defined orange-coloured streaks in the fat surrounding the kidneys and in the fat of other parts where it is deposited in considerable amount A similar condition I have occasionally observed in home killed animals, but whether it affects home killed or imported animals it is only found in the fattest and best-conditioned The defect has not been regarded as one which will cause harm to human beings, but it is of such a pronounced character in some cases that it renders the fat unmarketable

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[6] Reports to the Local Government Board, by Dr G S Buchanan and Dr S B Schryver D Sc on the Application of Formaldehyde to Meat (Food Reports No 9)

Dr Andrewes investigated the condition in the fat removed from a home-killed animal It is probable that the following facts which he established would apply equally to the defect observed in imported carcasses The change appears to occur along the small blood vessels which accounts for the veined appearance of the orange coloured marking The fat in the affected area is largely split up with formation of abundant needle shaped crystals of fatty acids These do not stain with iodine, and are hence a saturated fatty acid probably stearic acid Such a change must be brought about by a fat-splitting ferment, which from the distribution of the change is probably conveyed by the blood It has been proved by Abderhalden that when animals receive a diet containing fat in excess, such a fat-splitting ferment becomes actually demonstrable in the blood. It is therefore possible that in fattened animals a sufficient amount of the ferment is present in the blood at death to give rise to local fat splitting around the blood vessels Mr Mackenzie Wallis, on Dr Andrewes's staff, examined the pigment of the yellow areas, which he found could be readily extracted with petroleum ether, to some extent with ether, but not by alcohol The solution gave the spectrum of a lipochrome. There were no bands suggesting derivation from hæmoglobin, nor was there any evidence of hæmatoidin or any blood derivative It could not be determined whether the pigmentation was due to a concentration of the natural lipochrome of the fat or to lipochrome brought by the blood stream

The conclusion to be drawn from the above is that animals may be "over conditioned" with consequent loss to the salesman owing to the unmarketable characteristics which are acquired by considerable quantities of valuable fat

THE DISEASES OF IMPORTED CARCASSES

The diseases to which foreign cattle are subject differ in many respects from those observed in this country, and although it would not be possible here to enter fully into any detailed description, it may be of service to direct attention to the main features In general it may be stated that diseased carcasses are eliminated from those exported, and to this extent a word of appreciation of this branch of inspection as conducted in exporting countries is not out of place.

The chief exporting countries and the class of product exported have already been described and the chief affections met with are —

Australia Onchocerciasis in cattle

Argentina Actinomycosis in ox tongues and a number of instances of tuberculosis

Holland Tuberculosis and hæmorrhagic lesions in pigs

Russia Foot and mouth disease was noted in a number of dried tongues imported in 1913

Sweden This country before the war exported many calves, but no exceptional incidence of disease was noted

Cases of caseous lymphadenitis are occasionally met with in sheep from different countries

Organs occasionally show evidence of the usual parasitic diseases and other conditions which may have escaped detection during inspection

Onchocerciasis which results from invasion of cattle by the parasitic worm *Onchocerca gibsoni*, has been dealt with administratively on the following lines The brisket, in which joint are chiefly located what are termed the worm nests characteristic of this disease, is cut off all Australian carcasses exported to this country, and the region of the stifle joint is explored by suitable incisions for the presence of the nodules These mutilations of sides of frozen meat are sufficient to distinguish Australian meat from all other and are carried out by arrangement between this country and Australia The only difficulty which now arises is that the briskets are occasionally cut too short with the result that the worm nests may be found on the forequarter in the neighbourhood of the incision This is an infrequent occurrence and is generally the result of some easily remedied inspectorial difficulty

The loss to Australian cattle breeders must be considerable from this cause, and research work is in progress with the object of devising suitable preventive measures The present position of knowledge[7] appears to be that by means of a biting insect, either *Stomoxys calcitrans* or *Culicoides vigilax*, embryos are taken up from the bovine host In the insect a certain stage of development takes place, and eventually the partly developed worm or worms are injected into the subcutaneous tissue of the new bovine host Having been injected, the worms increase in size and start on their migrations From the lower part of the leg they reach the front of the knees, and from the fore limb they reach the brisket area Living embryos are deposited and by means of toxic products cause a certain amount of swelling which leads eventually to some degree of fibrosis When the adult worm is arrested embryos continue to be released, and the reaction results in the encapsulation of the worm in the fibrous mass which is noted in meat-inspection work The embryos in the early stage, or even after encapsulation, may escape and reach situations where they may be taken up by a biting fly

As regards Argentine animals, the following particulars (Table XV) given to Mr Young, veterinary surgeon of the City Corporation, indicate the prevalent diseases and their frequency (The figures relate to the year 1912)

TABLE XV

—	Cattle	Pigs	Sheep
Total number slaughtered	1,368,000	8922	3,217,367
Tuberculosis ..	4%	19 3%	—
Echinococcus veterinorum	25%	—	28 3%
Distomatosis	—	—	2 4%
Actino-bacillus	6407	—	—
Jaundice ..	1467	—	1713
Trichinosis ..	—	2 5%	—
Cysticercus cellulosæ	—	0·3%	—
Caseous lymphadenitis	—	—	3·6%

Actinomycosis —The presence of actinomycosis in Argentine ox tongues has been reported on both by the officers of the corporations of Liverpool and London In London the condition is still noted, but not so frequently as two years ago, and the diseased tongues which are now observed are generally only slightly affected The condition has been recently investigated by Dr Griffith,[8] of the Local Government Board, who considers in a preliminary report, that the bacillus of Lignières and Spitz is responsible for the Argentine cases He also found that 40 out of 44 English cases were caused by the same bacillus As actinomycosis is a disease to which human beings are liable, this condition requires further investigation, and the prohibition should meanwhile be continued against the importation of tongues so infected.

The condition in ox tongues chiefly affects the retropharyngeal glands more rarely the blades In the early stages the glands may not even be enlarged but section shows the glandular elements to contain several prominent points resembling granulation tissue In more advanced cases the glands are enlarged and filled with yellowish semi purulent material containing sand like gritty bodies The disease may be mistaken for tuberculosis with which the Liverpool researches indicate it is frequently associated A few years ago the percentage of affected tongues imported into London varied in different consignments between 5 and 20 per cent

Hæmorrhagic flesh —The hæmorrhagic condition observed in pigs imported from Holland is apparently not the result of disease and is probably of similar origin to the corresponding condition occasionally observed in pigs, and sometimes in cattle, slaughtered in this country Punctate or even larger hæmorrhages in the muscular tissue of the diaphragmatic and abdominal muscles are seen in animals which are obviously in sound condition These appear to be due to the laceration of the muscular elements and capillaries by the muscular contractions which follow stunning, particularly when several are stunned at a time and some little interval elapses before they are bled. The condition is objectionable if very extensive since the number of hæmorrhagic points renders the flesh unsightly and may encourage premature decomposition If the condition is of limited extent the affected part may be removed and destroyed, but if extensive condemnation of the carcass is called for

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[7] Further Investigations into the Etiology of Worm Nests in Cattle due to *Onchocerca gibsoni* By J Burton Cleland M.D , Ch M Sydney Commonwealth of Australia 1914

[8] Preliminary Report on the Pathology of Bovine Actinomycosis by Fred Griffith M B Local Government Board Food Reports No 23

Berger[9] has investigated this subject and reports having observed in the *situations stated* hæmorrhages of a length of from a few millimetres to 2 centimetres with an average width of 2 millimetres Berger had control of two establishments at which pigs were slaughtered and made the following observations —

In abattoir A, previous to May 1st, 1909, the pigs were slaughtered with the mallet in batches of 20 at a time, each pig receiving a blow with the mallet, but it was not till the *whole 20 had been thus stunned that bleeding* was practised Moreover, the animals were not bled in accordance with the order in which they were stunned While this method was followed the hæmorrhages under consideration were very abundant at this abattoir, 2 per cent of the pigs showing them

In abattoir B the pigs for a long time had been killed by the American method—viz , the animal being suspended in the air by the hind limbs and bled immediately without stunning, with the head hanging downwards In about 140,000 pigs killed in this fashion Berger never observed the hæmorrhages

Previous stunning was then introduced into this abattoir, and from the day of its introduction the hæmorrhages commenced to appear

The author thinks, therefore, that the hæmorrhages may be attributed to the stunning He has attempted to find out whether the exact method of stunning adopted exercises any influence, and he has been informed that the hæmorrhages have not been observed in abattoirs where special apparatus (the bullet, percussion, &c) are employed In Germany, where pigs are generally stunned by a blow from the mallet, hæmorrhages are encountered in 25 per cent of those killed

In abattoirs it often happens that, no order being followed, the first pigs to be stunned in a batch are the last to be bled In Abattoir A, therefore, it was arranged that no more than six pigs were to be stunned at a time before bleeding, and when this was done, it was quickly found that muscular hæmorrhages diminished

Berger then directed that the pigs should be bled immediately after stunning, and while previous to this he had found hæmorrhages in 2 per cent of the animals killed, he has since, up to the present time, inspected 5000 pigs without *finding one case Ruptures of the muscular fibres*, however, are still observed, but as the pigs are bled immediately, the blood has little time to become extravasated into these ruptures

It is evident, nevertheless, that *hæmorrhages may be produced* a certain time before slaughter by the different traumatisms in which the pigs may be exposed

Foot and-mouth disease was noted as affecting several consignments of smoked tongues received in London prior to the war They arrived from a district in which the disease was endemic, and it was observed that the lesions varied from the early vesicular stage to healed cicatrices A separate inspection of all tongues was called for and a decision arrived at that in future, consignments showing such lesions would be refused admission, as the duty of controlling *such imported food rested* with the authorities of the country of origin

THE HANDLING OF MEAT

The handling of meat is a subject which affects both the distribution of home killed and imported products It is a matter to which attention has been often directed in the past, but no permanent improvement has so far been effected The transportation of imported meat from the ships to the cold stores and thence to the market compares favourably with that of home killed produce, but the transference of meat of either class from the market to butchers' shops *often leaves much to be desired*

Many persons in country districts who slaughter only small amounts send the meat to market by passenger train, and it often happens that sufficient attention is not paid to the packing The same *observation applies to meat sent to* country shops Defective packing encourages decomposition, and inadequate covering renders the meat liable to contamination in transit

After the purchase of meat at the wholesale market has been completed subsequent care becomes the responsibility of the purchaser Porters are generally engaged to perform the manual labour of conveying the meat from the stall to the carts which convey it to the retailers' premises A porter carries meat on his back, and when large parts are transferred it often rests on his head In addition to the requirement that porters should frequently change their overalls, they ought also to be required to wear a washable head covering

On arrival of meat at the carts it should not be placed at the ground level, even if on low wooden supports, prior to being packed in the cart , neither should trucks conveying meat be allowed to stand in public ways uncovered where the cut section of meat may collect dust and dirt.

Carts designed for any purpose except the satisfactory conveyance of meat are used Even when clean, unsatisfactory construction causes dirt to be left in places from which it cannot easily be removed

Coarse brown sacking is the most frequent covering I have seen used to enclose meat It is difficult to see when it is soiled, and as a consequence it is not scalded after each time of use White washable cloths are the exception

The bottom and sides of the cart are either covered with sacking or else with a layer of straw In some instances the straw is below the sacking, but by no means usually Straw is a most unsatisfactory medium on which to place the cut sections of meat

The meat is packed in the cart without satisfactory regard being paid to the danger of street dirt being conveyed to the meat If a white cover were laid on the bottom of the cart it could be rolled up as far as necessary whilst a part of the van is being packed and unrolled gradually as filling proceeds, thus covering the feet-marks of the man who must be in the cart. Other products are often packed with the meat. Boxes of rabbits and boxes containing various materials can often be seen either resting on the meat or supporting it The fur of the rabbits projects through the latticed wooden cover of the box and is often in contact with the meat. It *is impossible to state with what wooden boxes from* abroad have been in contact, and so one might enlarge upon this point

Tarpaulins are used for the outside cover, and these are often far from clean and sometimes come into contact with the produce, which should be avoided.

Drivers are not careful , some may be seen driving through the streets sitting on the meat The vans are not always completely covered Any day in different parts of London meat-vans may be seen with a great superficial area of meat exposed to the dust and dirt both at the front *and back*

It should be noted as emphasising these points that the meat is often not in the form of sides but has been cut across, leaving large moist sections of meat exposed These surfaces should be covered with grease *proof paper* and more use made of cloth coverings both for joints and for sides of beef In the slaughter houses due regard requires to be paid to the observance of cleanliness , in the markets the traders vie with one another in matters of order and cleanliness, and in the shops retailers recognise the value of brightness and prove it by good lighting, clean benches, bright brass and steel fittings, and clean looking tiles , but in the interval between purchase from the wholesale dealer and the reception of the meat at the shop there is this remarkable apathy displayed by some as regards observance of elementary rules

Although no ill results are reported as a direct consequence of present methods—for which perhaps we have to thank the cooking process to which meat is subsequently subjected—they offend sentiment and should be improved upon It is difficult to suggest any official action which can be taken at the present time, since no specific regulation is ignored and the negligence arises in what may be regarded as "no man's land " Inside the markets control is possible and is exercised, and meat is handled on many stalls in a manner which is worthy of commendation The difficulty chiefly arises outside The chief hope of immediate improvement rests with the butchers *Those who recognise* their responsibilities in this connexion should bring pressure to bear through their trade organisation on their less careful associates, and as a future *direct* effect it may be possible, if regulations are subsequently framed to control meat inspection, for the requirement that food shall be handled in a cleanly manner to be incorporated in the series

CONCLUSIONS

In conclusion, I need not say more than repeat the requirements which appear to me to be necessary to put meat inspection on a more satisfactory basis

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[9] Veterinary Record, Sept 30th 1911 Muscular Hæmorrhage in the Muscles of the Pig

1 With a view to ensuring uniformity of action *routine* meat inspection should be made a compulsory duty of all urban sanitary authorities

2 With a view to safeguarding more adequately the supply in urban districts there should be compulsory inspection of those slaughter houses in rural districts at which carcasses are dressed for sale in outside areas

3 Inspectors engaged on meat-inspection work should be required to possess proof of knowledge of the subject

4 Regulations should be framed dealing not only with the details of inspection of carcasses but with the sanitary requirements of slaughter houses, facilities for inspection, and perhaps the requirements of ante-mortem examinations

5 A system of meat marking under the direct control of the Local Government Board should be instituted, and as a commencement its adoption should be voluntary, but permission to adopt should be within the power of the Board to grant or to refuse

6 In districts where a system of meat-marking is in operation the local authority should have power to require that all meat used in prepared food products should be inspected and approved before being used.

7 In view of the impossibility of satisfactorily examining in this country imported boned meat and meat in the canned form, some of the responsibility which now devolves upon home inspectors should be accepted by the Government who should appoint inspectors to visit the chief places abroad where the work of boning, canning, and exporting meat generally is carried out In this way attention could be given to the observance of hygienic requirements and to the quality and character of the meat used.

8 Regulations should be framed to control cold stores in which food products of any kind are stored

9 Regulations should be framed to ensure that meat is handled in a cleanly manner

THE PHYSIOLOGICAL AND ANTISEPTIC ACTION OF FLAVINE

(WITH SOME OBSERVATIONS ON THE TESTING OF ANTISEPTICS)

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FLAVINE, or acriflavine has been much in evidence recently and it has been claimed for it that it approaches the ideal antiseptic in that it has no deleterious effect on the tissues and that the antiseptic power is increased by admixture with serum Browning and his co-workers[1] have published a table giving the antiseptic values and the influence on phagocytosis of a number of antiseptic solutions and they arrange them in order of merit by means of a 'therapeutic coefficient " which they define as the ratio of the antiseptic power in serum to the power of inhibiting phagocytosis The latter is used as an index of the general toxicity to living matter " They claim for flavine that it has a very high antiseptic value for the common organisms found in wounds and that in the strength they apply it (1 in 1000) it is practically without harmful effect on the tissues as measured by its action on leucocytes

This antiseptic has been introduced into practice purely as the result of laboratory experiments and thus it would be well to make sure that these are without flaw before drawing deductions as to its clinical value

I propose to set forth in this article the result of some experiments I have made with flavine, which show that the claims which have been made that this substance approaches the ideal antiseptic are based on fallacious experiments, and that by altering the experimental conditions slightly the "therapeutic coefficient' can be altered to an enormous extent I will show also that the action of flavine on living tissues (as exemplified by leucocytes) is far in excess of its lethal action on bacteria

The flavine used in these experiments was supplied by the Medical Research Committee and has been tested at the Bland-Sutton Institute to ' ensure its being free from toxicity to human tissues and as efficacious in the control of bacterial infections as the sample with which the preliminary experiments and trials were conducted "

PART I —*Action of Flavine on Human Blood*

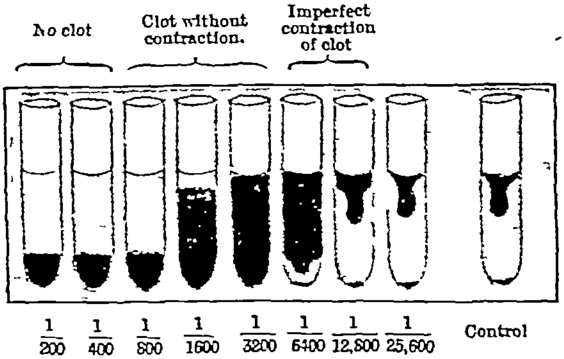
(*a*) *On the red corpuscles* —There is very marked agglutination of human red corpuscles up to a dilution of flavine of 1 in 3200 A dilution of 1 in 6400 showed only slight agglutination and the higher dilutions showed none at all This would only be of importance if flavine were used as an intravenous injection, but I hope to produce evidence later that flavine is useless as a therapeutic agent by the intravenous route, so this point need not be further discussed

(*b*) *On the clotting power of the blood*

Experiment 1 —My own blood mixed with an equal volume of normal salt solution clotted in 2½ minutes at 37° C Under the same conditions my blood mixed with an equal volume of flavine (1 in 1000 in normal salt solution) failed to clot in 60 minutes

Experiment 2 —One volume of each of a series of progressive dilutions of flavine were mixed with an equal volume of my blood in small test tubes and incubated at 37° C for three hours The results are shown in Fig 1 from which it can be seen that 1 in 400 flavine has completely inhibited clotting, 1 in 800 had formed a very light clot after the agglutinated corpuscles had sedimented 1 in 1600 and 1 in 3200 showed loose clots and here the sedimentation had not proceeded so far before clotting had occurred 1 in 6400 was the first dilution in which any contraction of the clot was observed and even in 1 in 12,800 there was shown some deficiency in the contraction of the clot

FIG 1



Effect of flavine on coagulation of blood

It is very difficult to estimate the importance of this inhibitory power on the coagulation of the blood Sir Almroth Wright has for many years combined with his hypertonic salt solution some citrate of soda to prevent clotting of the lymph in a wound and flavine may be beneficial in this way This action of flavine however, must be borne in mind when it is applied to freshly incised wounds which may be oozing and where the inhibitory action on clotting would allow this oozing to continue Probably the flavine would soon be diluted below the point at which it has any action, but even then the result would be an excessive amount of blood clot which might furnish a nidus for bacterial growth

(*c*) *Action of flavine on the leucocytes* —Browning and his co-workers measured the toxic effect of flavine and other antiseptics on the leucocytes by introducing these substances as a fourth volume in an ordinary opsonic mixture and estimating the amount of phagocytosis which had taken place in 20 minutes A more direct method is to observe the effect of the antiseptic directly on the movements of the leucocytes Sir Almroth Wright[2] has given us a simple method of observing the emigration of leucocytes, and this method I have used except that instead of blowing out the clots and staining them I have examined them directly at intervals *in situ*

Experiment 3 —Serial dilutions of flavine are made in normal salt solution, and to each of these dilutions is added an equal volume of blood from the finger They are rapidly mixed drawn into Wright s emigration tubes, sealed at one end, and centrifuged before the blood has clotted After this the tubes are closed and arranged in order on a microscope slide being kept in place by plasticine. They are then incubated at 37° C., with the portion of the tubes containing the red blood corpuscles downwards so that any leucocytic emigration into the white clot has to be against gravity After intervals of one three and six hours the tubes are examined with a 2 3-inch or a 1/6-inch objective and the amount of emigration noted

Using this method I find constantly that a 1 in 2000 dilution of flavine completely inhibits the emigration of the leucocytes, while a 1 in 4000 dilution shows a partial inhibition In dilutions weaker than this the leucocytes have emigrated through a distance corresponding to three or four fields of a 1/6-inch objective as they have done in the control without flavine,[3] but in the tubes containing flavine up to a dilution of 1 in 64,000 (the highest dilution observed) the leucocytes appear as rounded bodies in marked contrast to those in the control tube which present a very irregular appearance and show active amœboid movements In all the flavine dilutions also the leucocytes take up the stain and show a much deeper yellow colour than does the surrounding fluid

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[1] Browning Kennaway Gulbransen and Thornton: Brit Med Jour Jan. 20th, 1917

[2] Wright: THE LANCET April 17th 1915

This attraction of the leucocytes for the dye and the absence of amœboid movement naturally lead to the question, "Are these leucocytes in the flavine dilutions dead?" To test this I estimated the phagocytic power of leucocytes after exposure to various strengths of flavine

Experiment 4.—Serial dilutions of flavine were made in normal salt solution from 1 in 500 to 1 in 32,000 To 0 5 c c of each of these dilutions was added 0 5 c c. of defibrinated human blood. These were mixed and incubated at 37° C A control tube was also made with equal volumes of defibrinated blood and normal salt solution After five hours incubation the tubes were shaken and with capillary pipettes two volumes of the contents of each tube were mixed with one volume of staphylococcus emulsion, incubated for 15 minutes at 37° C and then proceeded with as in the estimation of the opsonic index The cocci contained in 100 cells were enumerated (where 100 recognisable cells could be found). The results are shown on Table I —

TABLE I—*Phagocytic Power of Leucocytes after Exposure to Flavine for Five Hours*

Flavine concentration	No of cocci in 100 cells	Condition of leucocytes
1 in 1 000	0	*Broken up and hardly recognisable*
1 , 2,000	0	" "
1 4 000	0	Mostly destroyed A few stain well
1 ,, 8,000	0	" "
1 16 000	25	Much disintegrated
1 , 32,000	59	
1 64 000	128	
Control	920	Normal appearance

Experiment 5—The previous experiment was repeated except that the flavine dilutions were made in defibrinated blood from a 1 in 1000 saline solution of flavine To 0 5 c c of each of these dilutions was added 0·5 c.c of defibrinated blood Samples were tested as in the previous experiment, after 5 hours and again after 24 hours The results are shown on Table II —

TABLE II.—*Phagocytic Power of Leucocytes after Exposure to Flavine Dissolved in Blood*

1 *After 5 hours*

Flavine concentration	Cocci in 100 cells	Condition of leucocytes
1 in 2 000	0	Hardly recognisable as cells
1 , 4 000	0	" "
1 8,000	0	One or two with nuclei still visible
1 , 16 000	0	
1 , 32,000	5*	Either broken up or pycnotic
1 64 000	7	" "
1 ,, 128 000	49	
1 , 256 000	53	"
1 600 000	200	Many broken up but *some* stain normally
1 1 000 000	192	"
1 , 2,000 000	320	In good condition
Control	372	"

* In 1 cell

2 *After 24 hours*—The cells in all the dilutions up to 1 in 2,000 000 were much broken up and none of them showed any phagocytosis although in the control tube the leucocytes stained well and nearly all of them contained ingested cocci

An experiment similar to Experiment 5 was done substituting carbolic acid for flavine and it was found that a 1 in 2000 dilution only partially destroyed the functions of the leucocytes in 24 hours

We see from these experiments that flavine, if allowed to act for some hours, has a very powerful leucocidal action and that even a 1 in 2,000,000 dilution will completely destroy all the leucocytes in 24 hours The leucocidal action, also, is more marked in Experiment 5, in which flavine was acting in a greater concentration of serum, than in Experiment 4, in which equal parts of a saline solution and blood were employed This indicates that possibly the leucocidal action of flavine is enhanced by combination with serum in the same way as is bactericidal action The lethal effect of flavine on leucocytes is, as we shall see later, much greater than its bactericidal action

The importance of the time factor in regard to the estimation of the toxicity of flavine on the leucocytes will be further discussed in connexion with the "therapeutic coefficient"

PART II—*Antiseptic Action of Flavine*

Browning and his co-workers have given the following figures for the antibacterial power of flavine —

Medium	Organism	Lethal concentration of flavine.
Peptone water	Staphylococcus	1 in 20,000
Serum		1 200,000
Peptone water	*B coli*	1 , 1,300
Serum		1 100,000
Blood	Staphylococcus	1 , 40,000
Pus	Staphylococcus and streptococcus	1 2,000

The following experiments will bring out clearly, among other things, that the high antiseptic values for flavine in serum can only be obtained in special conditions, and do not give us a clear indication as to the value of this antiseptic as an application to wounds

Does the Number of Microbes Introduced into the Antiseptic Solutions make an Appreciable Difference to the "Lethal Concentration" of the Antiseptic?

Browning and his co workers in their experiments on flavine added 0 1 c c of a 1 in 20,000 dilution of a peptone water culture of the organism to 1 c c of the antiseptic solution A loopful of such a dilution of the culture "yielded 20 or more colonies" We see, then, that in all cases they gave the antiseptic only a very few microbes to kill I made some experiments with a view to ascertaining what difference was made to the apparent lethal concentration of an antiseptic by the addition of varying numbers of microbes

Experiment 6—Progressive dilutions of carbolic acid crystal violet, and flavine were made in broth and to 0 5 c.c. of each of these dilutions was added 0 5 c c of a staphylococcus emulsion in broth A control tube was put up in which the antiseptic was replaced by broth and 10 c mm of this control tube yielded 32 colonies when plated on agar Thus the staphylococcal emulsion used in this case was probably somewhat weaker than that used by Browning Another set of tubes were put up identical with the last, except that the staphylococcal emulsion used was 5 000 000 times as strong The tubes were incubated at 37° C At intervals 10 c mm samples were taken out and transferred to broth tubes The results are shown in Table III :—

TABLE III—*Effect of Variation of the Strength of the Bacterial Emulsion on the "Lethal Concentration" of an Antiseptic* (*in Broth*)

CARBOLIC ACID							CRYSTAL VIOLET							FLAVINE.						
Concentration of antiseptic	Strong emul of staph*			Weak emul of staph.			Concentration of antiseptic	Strong emul of staph			Weak emul of staph.			Concentration of antiseptic.	Strong emul. of staph.			Weak emul. of staph		
	Time of action of antiseptic (in hours)							Time of action of antiseptic (in hours)							Time of action of antiseptic (in hours)					
	2	5	23	2	5	23		2	5	23	2	5	23		2	5	23	2	5	23
1 in— 100	+	0	0	0	0	0	1 in— 10 000	+	+	0	0	0	0	1 in— 1 000	+	+	0	0	0	0
200	+	+	+	+	0	0	20 000	+	+	+	0	0	0	2,000	+	+	0	0	0	0
400	+	+	+	+	+	+	40 000	+	+	+	+	+	0	4 000	+	+	0	0	0	0
800	+	+	+	+	+	+	80 000	+	+	+	+	+	0	8 000	+	+	+	0	0	0
							160 000	+	+	+	+	+	0	16 000	+	+	+	+	+	0
							320 000	+	+	+	+	+	0	32,000	+	+	+	+	+	0
							640 000	+	+	+	+	+	0	64 000	+	+	+	+	+	0
							1 280 000	+	+	+	+	+	+	128,000	+	+	+	+	+	0
							2,560 000	+	+	+	+	+	+	256 000	+	+	+	+	+	0

* Staph = Staphylococci, emul = emulsion

+ = Growth on subculture O = Complete sterilisation

Experiment 7—Two series of experiments were made the only difference being that in the one case the staphylococcal emulsion was 100 000 times stronger than in the other Progressive dilutions of flavine were made in serum and one volume of each of these dilutions was thoroughly mixed with an equal volume of staphylococcus emulsion in serum, incubated in capillary tubes at 37° C for 24 hours, after which the contents were blown out into broth tubes The results were as follows

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[3] In this method the leucocytes do not after three hours appear to wander farther away from the red clot when they have no special stimulus attracting them

Staphylococcus emulsion.	Strength in which flavine acted on the bacteria						
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Control
Strong	Growth	Growth	Growth	Growth	Growth	Growth	Growth
Weak	0	0	0	0	Growth	Growth	Growth

These two experiments show clearly that the number of microbes on which an antiseptic has to act either in broth or serum plays an important part in the determination of the lethal concentration of an antiseptic We see also from Experiment 6 that in respect of changes in the number of microbes flavine is much more sensitive than is carbolic acid It follows from this that as the antiseptic has to act in wounds both heavily and lightly infected, this factor must be taken into account in any comparison of antiseptics

What is the Concentration of Flavine which will Inhibit the Growth of Microbes in Serum?

Experiment 8—Progressive dilutions of flavine were made in serum To one volume of each of these dilutions was added one volume of serum which had been implanted with the microbe used in the test

As some microbes grow badly in serum and do not macroscopically show evidence of growth, I added to the serum in some cases 1 20th of its volume of trypsin (which was just in excess of the quantity necessary for the neutralisation of the antitryptic power of the serum) and sometimes 1 50th of its volume of 50 per cent. glucose solution. Trypsin made the serum a good cultivation medium, and the glucose was acted on by the microbes with the production of acid in the case of cocci and acid and gas in the case of *B coli* and *B proteus*

These experiments were conducted in miniature test tubes and after the mixtures had been made in the tubes melted vaseline was poured on the surface of the cultivation fluid to make a layer about 1 cm. deep This vaseline protected the fluid from outside contamination and at the same time it was forced up the tube by any gas that was formed in the cultivation fluid It served as an easy method of measuring the amount of gas and giving some index of the amount of growth

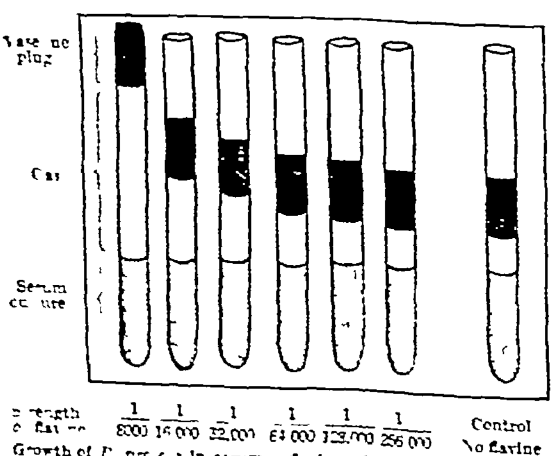
In these experiments the number of microbes implanted was not estimated but in all cases it was considerable (usually a loopful of bacteria from an agar culture was emulsified in about 5 c.c of serum)

The results are set forth in Table IV

TABLE IV—*Inhibitory Action of Flavine on the Growth of Microbes in Serum*

No	Organism	Medium.	Time of action of antiseptic	Lowest concentration of flavine in which no growth occurred	Greatest concentration of flavine which showed growth
1	Staphylococcus.	Serum–Trypsin–Glucose.	3 days	1 80 000	1 160 000
2			7	1 16 000	1 32,000
3	*B coli*		13 hrs	—	1 1000
4	*B proteus*		36	1 1000	1 2000
5		Serum – glucose	7 days	1 4000	1 8000
6	*B coli*		7	1 2000	1 4000

FIG 2



Growth of *B proteus* in serum – flavine showing the great increase of growth (as evidenced by increased gas production) in the stronger dilutions of flavine ([illegible] actual size)

Experiment 4 of Table IV requires special mention At the end of 36 hours the tubes containing the three strongest concentrations of flavine—namely 1 in 1000 2000 and 4000—were opened and examined Pure growths of *B proteus* were obtained from all of them The remaining tubes were left standing on the bench, and after one month it was noticed that they showed a gradual increase in the amount of growth as evidenced by the gas formation, from the control tube, in which there was no flavine, to the tube containing the greatest concentration of flavine (1 in 8000) The diagram (Fig 2), drawn to scale, represents the height of the gas column in the various tubes

The increase in the gas formation in the stronger flavine concentrations indicates that in some way flavine had favoured the growth of the microbes, and the regularity of the increase further proves that it is not accidental but is actually due to the flavine, as the contents of the tubes are identical except as regards this substance Experiment 5 of Table IV confirmed this result

Antiseptic Value of Flavine in Serum

It has been shown in Table IV when dealing with the inhibitory action of flavine on the growth of microbes in serum that staphylococci can grow in 1 in 32,000 flavine *B coli* in 1 in 1000, and *B proteus* in 1 in 2000 Experiment 7 also shows that sterilisation of a strong staphylococcus emulsion is not effected by a 1 in 20 000 dilution of flavine, although when using a weak emulsion 1 in 160,000 is sufficient to kill all the microbes (This last figure is practically the same as the figure given by Browning as the lethal concentration of flavine in serum on staphylococci.) In another experiment in which I used a large number of staphylococci I found that growth resulted after a 24-hour exposure to a 1 in 2000 dilution of flavine in serum Usually however when a fairly strong staphylococcal emulsion is used complete sterilisation is effected in 24 hours by a 1 in 4000 to a 1 in 16 000 dilution

Flavine 1 in 8000 in serum sterilised a *B coli* emulsion containing 1500 million living organisms per c c, while 1 in 64,000 sterilised an emulsion of 4000 *B coli* per c c

Antiseptic Value in a Non serous Medium

Table III gives details of the antiseptic value of flavine in nutrient broth, from which it appears that in 23 hours a 1 in 6000 dilution failed to sterilise a strong emulsion of staphylococcus while a 1 in 256,000 was capable of sterilising a very weak emulsion.

It was found that when flavine was added to a 48-hour-old broth culture of staphylococcus in sufficient quantity to make a 1 in 1000 solution it was unable to kill all the cocci in 24 hours at 37° C Carbolic acid 1 in 100 rendered a similar culture sterile in less than six hours

Antiseptic Power of Flavine in Blood in Vitro

Experiment 9—Progressive dilutions of a 1 per cent. flavine solution were made in defibrinated human blood and one volume of each of these was mixed with one volume of the same blood containing staphylococci Two sets of experiments were made the only difference being that the staphylococcal emulsion was 100 000 times as strong in the one as in the other The mixtures were incubated at 37° C for 24 hours and then planted into broth. The results were as follows:—

Staphylococcus emulsion	Concentration of flavine					—
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Control
Strong … … …	0	Growth	Growth	Growth	Growth	Growth
Weak … … … …	0	0	0		„	

This experiment shows that the antiseptic action of flavine is much weaker in blood than it is in serum

Action of Flavine on Pus

When strong solutions of flavine are mixed with equal parts of pus they cause a very marked agglutination of the pus cells and after incubation it can be seen that the pus in such a mixture has become mucoid in consistency This mucoid alteration of the pus which is probably due to the destructive nature of flavine on the cells, is noticeable up to a 1 in 6000 dilution In wounds treated with flavine this mucoid appearance of the pus is sometimes manifest and it may be that this will interfere with the distribution of the antiseptic. As in wounds however there appear to be so many factors which interfere with the action of flavine that it is unnecessary to lay much stress on this

Antiseptic action in pus—In these experiments flavine in saline solution was thoroughly mixed with pus from wounds either in equal parts or in the proportion of 1 part of flavine to 9 parts of pus The specimens of pus were obtained from wounds in different stages of healing, and they differed materially in the nature and the number of microbes contained in them No account was taken of the spore-bearing anaerobes as we were dealing here only with the action of flavine on the vegetative forms of bacteria In all cases the antiseptic was allowed to act on the pus for 24 hours at 37° C, after which a sample of the mixture was planted on agar or into broth Seven specimens of pus were subjected to the action of flavine in a concentration of 1 in 1000 and in only one of these was sterilisation effected In the other six specimens the resultant cultures did not differ as regards the variety of microbes from the control cultures Staphylococci, Streptococci, coliform bacilli, *B pyocyaneus* and *B proteus* all survived the action of flavine We see, then, that flavine is a relatively weak antiseptic in pus, and that in only one case was a concentration of 1 in 500 (twice the strength recommended for use in wounds) capable of sterilising an equal volume of pus

It is obvious that there is something in pus which prevents the action of flavine on the microbes The concentration required to kill microbes in pus is far greater than that required in serum, although the liquor puris is of a serous nature The simplest explanation of this is that the pus cells have a greater attraction for flavine than have the microbes In this connexion some experiments were made on the quenching' power of pus on flavine

Experiment 10—Equal quantities of flavine (1 in 500) and pus were mixed and immediately centrifuged The antiseptic power of the supernatant fluid was then tested on staphylococcus emulsified in serum and compared with the lethal power of fresh dilutions in serum of flavine (from a 1 in 1000 solution in normal saline) on the same emulsion of staphylococci The ' quenched" flavine undiluted was just capable of sterilising this serum in 24 hours but a twofold dilution was insufficient whereas with fresh flavine complete sterilisation was effected by a 1 in 8000 dilution

We see then that by contact with an equal volume of pus a 1 in 500 dilution of flavine loses 7/8ths of its antiseptic power almost immediately

Experiment 11—Flavine dilutions 1 in 100, 200 400 and 800 were mixed with equal volumes of pus and centrifuged immediately The intensity of the colour in the supernatant fluids were tested by putting equal sized drops of these on a white filter paper and matching these with a series of similar drops of progressive dilutions of fresh flavine By this method it was found that the two strongest flavine dilutions exhausted with pus had lost half, the 1 in 400 dilution had lost 2/3rds, and the 1 in 800 had lost about 5/6ths of the colour intensity

These two experiments show clearly that flavine by intimate contact with pus loses a large part of its power practically immediately

The results of the absorption of flavine by pus cells naturally leads to the question of the affinity of other cells of the animal body for this substance, and the following experiments were designed to give some indication of what happens when flavine is injected into the body

Browning and his co-workers state that flavine (1 in 1000) can be administered intravenously without toxic effect, and because of this non toxic action flavine has been used intravenously as a therapeutic measure in conditions like streptococcal septicæmia in the hope that the dye will have a directly lethal effect on the cocci in the blood

Experiment 12—A rabbit, weighing 3 lb was injected intravenously with 10 c c of flavine (1 in 1000) Blood was taken before immediately after and again 15 minutes after the injection The sera which separated from these blood specimens did not show the slightest trace of the canary yellow colour of flavine or any fluorescence and none of them had the slightest bactericidal effect on staphylococcus or inhibitory power on the growth of this organism The urine which was bright yellow had no bactericidal power on staphylococcus

We see therefore that flavine is immediately removed from the blood, which does not acquire any bactericidal action, and that therefore there is no justification for the therapeutic use of flavine intravenously as an antiseptic

Browning and his co-workers have recommended the injection of flavine into the tissues as a means of preventing the spread of infection As it is impossible to recover the flavine injected this way, I tried to get some idea of the fate of this substance when injected into closed spaces by introducing it into the pleural and peritoneal cavities of animals

Experiment 13—Two c c of flavine (1 in 100) were injected intraperitoneally into a three quarters grown rat. Two hours afterwards the rat was killed and it was found that all the tissues of the body with the exception of the brain were coloured bright yellow Serum from the heart blood showed not a trace of the yellow colour of flavine The urine was bright yellow The peritoneal fluid urine, and blood were found to be without antiseptic power on staphylococcus

Experiment 14—Two c c of flavine (1 in 100) were injected into the pleural sac of a full-grown rat Death resulted within two hours All the tissues were bright yellow except the brain. The blood serum was distinctly yellow The pleural fluid and the blood serum failed to kill in 24 hours a few staphylococci

It follows from these experiments that when flavine 1 per cent is introduced into a closed cavity in the animal body it loses its antiseptic power within two hours Much more rapidly, then, will the (1 in 1000) solution recommended for use lose its potency

It might be argued that when flavine is introduced into the body it is immediately taken up by the muscles, connective tissues, &c., and that these are the tissues in which flavine would be useful in combating a severe local infection On theoretical grounds it is unlikely that when these tissues have such an affinity for the dye they will give it up to bacteria, but I tested this in the following experiment

Experiment 15—22 c c flavine (1 in 1000) were injected intravenously into a small rabbit Death resulted immediately Within half a minute blood was drawn from the heart and serum from this was distinctly yellow Five minutes later another sample of blood was taken from the subclavian artery and showed no trace of yellow colour thus proving that all the dye injected had been taken up by the tissues All the organs and muscles were a bright yellow colour A leg was amputated and into one of the muscles a small quantity of a broth culture of *B perfringens* was implanted In four hours at 37° C. there was obvious growth of the organism with gas formation. Portions of all the organs were planted with small amounts of *B perfringens* and growth resulted in every case

This experiment shows that flavine introduced intravenously, even in a dose far greater than would be given to man, is incapable of conferring on the tissues any inhibitory power against the growth of a microbe such as *B perfringens*

The great affinity which muscle tissue exerts towards flavine can be shown also by grinding up 1 gm of muscle with 1 c c of flavine 1 in 1000 and testing the colour intensity of the resulting free fluid This colour will be found to be reduced to about one-eighth of its original strength

The Action of Flavine in Wounds

Browning has scouted the suggestion that the potency of an antiseptic in pus gives much indication as to the value of such an antiseptic in a wound.[4] Of course, in dressing a wound all the pus in the cavity should be washed away before a fresh dressing is applied, but the exudation from the walls of the wound will consist of a serous fluid with a larger or smaller number of cells and a variable number of microbes, some inside the cells and some free This fluid, then, is not far removed from pus, and it is in this fluid that the antiseptic applied is first going to act Also the antiseptic and the fluid are not going to be intimately mixed as in test-tube experiments, but the antiseptic has to penetrate into the fluid by diffusion Thus the test tube experiment appears to be the less severe test for the antiseptic.

The action in this purulent exudate is only going to throw light on what is happening in the cavity of the wound, and any antiseptic, before it can begin to approach the ideal, must act beyond the cavity in the infected walls of the wound Here it would have to act in a tissue composed largely of cellular elements and bathed in a serous fluid No claims were made as to the penetrative powers of flavine, but in the light of the experiments quoted above, which show that the muscular tissues and the leucocytes have a very great power of reducing the potency of flavine, it is hardly conceivable that any penetrative power can exist Any antiseptic action of flavine, therefore, would be confined to the cavity of a wound, and, as it must act in the cavity in a fluid akin to pus, we have seen from the above experiments on its antiseptic action in pus that its potency when applied as is recommended in a 1 in 1000 dilution can only be very weak, much weaker, indeed, in regard to the concentration used than would be carbolic acid

We have also seen that flavine, although it appears to have little action on the leucocytes in a few minutes, has a most destructive effect when its action is prolonged over some hours, an effect greatly in excess of its lethal action on bacteria Let us consider what this may mean in a wound cavity The leucocytes when they first appear would not be hindered from ingesting the microbes Soon however they would themselves fall victims to the toxic effect of the flavine, and it is likely that this would occur before they had time to destroy the microbes ingested The flavine itself would be unlikely to have killed the microbes before they were ingested, as its lethal effect on bacteria is a very slow one It has been shown that the ingestion of microbes by leucocytes serves as a protection of such microbes against antiseptic solutions Thus the slow toxic action of the flavine on the leucocytes instead of being a virtue, may actually allow the bacteria to be protected against any antiseptic powers which flavine may possess

“Therapeutic Coefficient”

Lastly, we might shortly consider the value of the so called "therapeutic coefficient" as an index of the value of an antiseptic This has been defined by Browning and his co-workers as the concentration which reduces phagocytosis 50 per cent divided by the concentration just sufficient to kill bacteria in serum A consideration of the text of their article, however, shows that it really amounts to a comparison of the toxicity to leucocytes with the toxicity to bacteria (acting in serum) The experiments which I have detailed above show clearly that in regard to flavine this coefficient, as arrived at by the authors of the expression, gives information so misleading that as a practical test it is quite valueless In calculating the toxic power of substances towards leucocytes they apparently paid no attention to the time factor, but in all cases used 20 minutes only as the time during which the action on leucocytes was observed It would seem obvious that just as antiseptics act quickly or slowly on bacteria, so they will act quickly or slowly on leucocytes Thus in the 20 minutes allowed only the antiseptics which acted rapidly on the leucocytes (and probably also on the bacteria) showed anything like their true effect If we take flavine as an instance of how neglect of the time factor permitted quite wrong conclusions to be drawn, we see that the numerator of the "coefficient" in 20 minutes is 1 in 500, whereas it is over 1 in 2,000 000 if 24 hours is the time allowed Thus by a small alteration in the experimental method we get an alteration of the coefficient by at least 4000 times to the detriment of flavine

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[4] Browning: Brit. Med Jour, Feb 3rd 1917

Again, the "lethal concentration" on bacteria in serum is a very variable quantity, and it has been shown above that by altering the strength of the bacterial emulsion the lethal concentration to staphylococcus can be varied from 1 in 2000 to 1 in 160,000, or a variation of 80 times

We see, therefore, that in respect of flavine the numerator of the "therapeutic coefficient" is subject to a variation of at least 4000 times and the denominator to a variation of 80 times This is quite sufficient to show that the coefficient is worthless as a standard of antiseptic value Browning and his co workers in their calculations of the "therapeutic coefficient" of different antiseptics happened to choose all the conditions which favoured flavine—namely, a long period of action on the microbes, a serous medium in which to test the bactericidal action, a few microbes to kill and a short period of action on the leucocytes Thus they obtained a coefficient for flavine 800 times better than that given by carbolic acid If however, they had used many microbes and had allowed the antiseptics to act on the microbes and leucocytes alike for 24 hours they would have found that carbolic acid gives a coefficient at least ten times better than flavine where serum is the medium employed, or 250 times better if the lethal concentration were estimated in pus

The experiments detailed in this paper show that the theoretical basis for the use of flavine is thoroughly unsound, and that there seems nothing to specially recommend this substance as an antiseptic for use in septic wounds

Summary

1 Flavine strongly agglutinates human red corpuscles up to a dilution of 1 in 3200

2 Flavine has a strong anticoagulant effect on human blood

3 Flavine in a concentration of 1 in 2000 completely inhibits leucocytic emigration

4 Flavine has a very destructive action on leucocytes, and if the action on leucocytes and bacteria be each tested for 24 hours its leucocidal action is far in excess of its bactericidal action.

5 The number of microbes on which an antiseptic has to act has a very marked effect on the "lethal concentration" of the antiseptic

6 This alteration of the "lethal concentration" with the number of microbes varies in degree with different antiseptics, and appears to be especially marked in the case of certain aniline dyes This factor must in all cases be taken into account in any comparison of antiseptic values

7 When many microbes are used it requires a much greater concentration of flavine to effect sterilisation than that given as the ' lethal concentration by Browning and his co workers

8 In serum under certain conditions staphylococci will grow in 1 in 32,000 flavine, *B coli* in 1 in 1000 and *B proteus* in 1 in 2000

9 Flavine 1 in 8000 appears to aid the growth of *B proteus*

10 Flavine 1 in 500 is usually unable to sterilise in 24 hours an equal volume of pus from a wound

11 Flavine injected intravenously in large doses immediately disappears from the blood, which acquires no bactericidal power, and is taken up by the tissues, which become yellow but acquire no inhibitory power on the growth of bacteria

12 Flavine 1 in 100 injected into the pleural or peritoneal cavities loses its antiseptic power within two hours

13 Flavine is rapidly absorbed by pus or muscle tissue

14 The so-called "therapeutic coefficient" of flavine can be changed with slight variations of the experimental method by at least 300,000 times

15 If the antiseptic is allowed to act on staphylococci and leucocytes alike for 24 hours and the ratio is taken of its toxicity to both of these, carbolic acid has a coefficient 10 times better than flavine when the antiseptic acts on the microbes in serum and 250 times better when the bactericidal action is estimated in pus

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NERVOUS UNREST IN THE INFANT AS A CAUSE OF THE FAILURE OF BREAST-NURSING

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IN THE LANCET of Sept 27th, 1913, I published a paper upon the causes of the failure of women to nurse their infants at the breast I then urged that in the first establishment of the milk flow the part played by the mother was essentially a passive one, and that her contribution towards a successful result was limited to providing a nipple sufficiently large for the child to grasp firmly If the nipple was well developed the causes of failure were commonly to be found not in the mother but in the child I maintained that we had to distinguish between circumstances which prevented or delayed or interfered with the establishment of milk during the early weeks of lactation and circumstances which shortened the period of efficient lactation in the later months, and that the former—save in the all important question of the nipple—were concerned chiefly with defects in the child, while the latter were commonly dependent upon the condition of the mother

Among the causes which interfere with the suction of the infant, and so with the proper establishment of the milk supply, I enumerated the following (*a*) Dyspnœa from nasal catarrh, adenoid vegetation, the snuffles of congenital syphilis, bronchitis, or congenital heart disease (*b*) Infective or toxæmic states of all sorts, with or without pyrexia (*c*) Conditions such as cleft palate facial paralysis, Bednar's aphthæ, or stomatitis which interfered mechanically with suction (*d*) Prematurity and congenital debility Further, I referred to the adverse influence of mixed feeding instituted soon after birth in the hope of preventing the supposed ill effects of the period of physiological inanition which precedes the "coming in" of the milk, and I laid stress upon the danger of chilling the infant, a disaster which is apt to occur in weakly babies unless carefully graduated artificial heating takes the place of the warmth of the mother's body

The dyspnœic child lets go the nipple from exhaustion and because he cannot breathe and suck at the same time. The premature child and the child deprived of sufficient heat are sometimes too somnolent to sustain a sufficient effort The infected child may have no appetite or desire for food The child who has sucked once or twice from an easily running bottle may obstinately refuse the exertion of pulling at a still empty breast The child with a cleft palate or facial paralysis cannot maintain the necessary vacuum

Nervous Unrest in the Infant

I wish now to call attention to another defect in the child which, in my experience, is not uncommonly a cause of failure to nurse successfully—the inhibition of the sucking reflex by the infant's nervous unrest and excessive emotional display In the young infant the act of suction is not voluntary but reflex. It proceeds perfectly, as has often been observed, in an acephalic monster which is provided only with medullary centres This reflex act of sucking is produced by stimulation of the lips and tongue A finger placed upon the dorsum of the tongue in a certain position will instantly provoke a powerful movement of suction The reflex fails to appear if the child is too somnolent and inert It will also fail to appear if inhibited by extreme emotional excitement In some infants, generally of pronounced neurotic inheritance, the sudden change of environment which accompanies birth is capable of arousing a veritable nerve storm New sensations of pressure and of heat and cold which stream into their consciousness produce a paroxysm of unrest The infant starts convulsively at the gentlest touch, at a bright light, or a loud sound Sleep is resolutely refused, and wild, hysterical crying may last for hours at a time All this unrest increases the need for food, and, until effective suction has drawn the milk into the breast, no food is forthcoming The normal child spends almost all the first 24 hours in deep sleep, until he is roused by the oncoming sensations of hunger The baby whose nerves are on edge and who shows it by incessant, angry crying and restless movement, is likely to suffer much earlier as well as much more severely from the sensation of hunger If when put to the breast he sucks strongly, then the vigour of his suction soon produces its own reward in the early appearance of the milk, and all is well Unfortunately this is not the usual result of this excessive emotional display Too often the nervous unrest inhibits the sucking reflex Crying, spluttering, and gulping, the child mouths and bites at the nipple without fastening on, or, throwing back his head, continues to squirm and struggle without taking any notice of the proffered breast Hunger adds to the unrest, and unrest to the hunger, until everyone is tired out, the attempt at nursing is abandoned, and artificial feeding is begun With the bottle the difficulty does not persist in the same degree, partly because its flow is so readily produced by a minimum of suction, still more because, while it is almost impossible to follow with the mother's nipple the restless movements of the wriggling little face and mouth, it is easy enough to keep the teat of the bottle in position

The constant crying has a further disadvantage in the ill effect it has on the mother After the distress and pains of labour many women are in no condition to bear any further nervous strain The pitiful crying and the repeated unsuccessful attempts are both exhausting to her and depressing Unless we can intervene with successful treatment we cannot expect the mother to wait patiently and hopefully in the assurance that in the end all will come right Fortunately, it is a condition which is comparatively amenable to treatment

General Treatment

A great deal can be done by simple measures, by insisting upon a half darkened room, a warm soft bed, and absolute quiet The infant should be handled as little as possible, and when lifted the movement should be steady and gentle Dandling the baby in arms, patting him on the back, expostulating with him, and talking to him generally only make matters worse If by measures such as these a few days' sound sleep can be secured our difficulties are at an end It is a proper practice to put babies to the breast at regular intervals Ordinary babies of sound nervous organisation soon learn to adjust their appetites to routine and crying and restlessness begin only when the meal is due and are not excessive With the neurotic infant we shall wreck all by a too strict adherence to a rigid scheme and time-table With such a child after a passionate fit of crying lasting a quarter of an hour or more nursing may be most unsatisfactory Either the crying continues and the child takes no notice of the breast or after drinking rapidly, with much gulping and spluttering, he suffers immediately torments of indigestion, with renewed crying and restlessness Digestion is inhibited by excessive emotional display in infants as in adults With such children our only chance of success is to be active in seizing every reasonable opportunity that presents itself, having regard to rational time limits, to get the child to the breast while he is still asleep If very gently the slumbering child can be brought to the breast before he wakes with that convulsive start which is immediately followed by a storm of crying if while he still lies between sleeping and waking the nipple can be gently inserted into his mouth, the sucking reflex comes to its own again and not only is the breast drained steadily and well but the subsequent process of digestion is much more likely to be undisturbed The ordinary conditions of nursing routine, in a sense, must be reversed Till the nervous system becomes quieter we must feed the baby not when he wakes but when he sleeps

Medicinal Treatment

If opportunities for feeding the child are not sufficient—that is to say, if it is impossible, with all care to avoid stimulation, to find sufficient occasions when with the child asleep a meal is even approximately due—then it is not a difficult matter to increase their number For this purpose chloral hydrate is peculiarly suitable I have found that its effect in quieting the child and producing sufficient somnolence to allow the sucking reflex full play is much more marked, more certain, and more immediate than that of potassium bromide It should be given 20 minutes before the intended meal time. One grain is usually enough for a very young baby, dissolved in a teaspoonful of water with a little syrup of orange. I have sometimes had to adopt this manœuvre before each of five or six meals in the day, but, as a rule, three grains in the 24 hours will be sufficient, because other opportunities of feeding the child after sound sleep and, if possible, without rousing him, will present themselves In cases in which the diagnosis of the cause of the unrest and of the secondary dyspepsia is well established the most satisfactory results may follow this treatment. It is at least possible in a given case to put the matter to the test and to be guided by the result. I have very often demonstrated in the out-patient department how the restless, crying baby will utterly refuse to suck, and yet, after receiving a single grain of chloral and being put to rest quietly for 20 minutes, will draw the breast with regular, deep, and uninterrupted suction

The *nervous dyspepsia* of infants is controlled in the same way more efficiently by chloral than by any other drug The children often have a distinct neurotic inheritance *They are thin and meagre*, but, in contrast to what is usually found in primary dyspepsia, their muscular tone is often excessive The limbs are a little rigid, and the abdomen is often retracted rather than distended, with the outline of the recti muscles unduly apparent Their movements are very strong and powerful They wriggle all the time and the mother usually complains that they "almost jump out of her arms" They cry almost incessantly If fed after crying digestion *appears to* be a *most* painful process *Regurgitation* of food, sometimes explosively, is *common*, Without actual diarrhœa—that is, without change in the character of the stools—the bowels are often open eight or ten times in the day Instead of two or three large motions there are often very many small evacuations passed with much wriggling and grunting The taking of food is almost always followed by the passage of a stool and the "changing" and *cleaning necessary* rouse the child to crying and upset the sleep that should accompany digestion Treatment of this form of dyspepsia by ordinary measures is not successful The usual routine limitation of the food is actually harmful, for the child stands hunger very badly and the nervous unrest is directly increased As a rule, the symptoms yield to suitable doses of chloral and bromide With sound, deep sleep the digestive processes are no longer inhibited by mental irritation and the needs for food fall to a much lower level because the muscular work is promptly diminished.

I am loth *to* suggest further drug taking for babies—*they* suffer now I think from excessive prescribing—*but* I believe that the judicious use of small doses of chloral in this way will be found to be effective in preserving the breast-milk for a considerable number of nervous babies of nervous mothers, and in combating the gastric and intestinal hyperæsthesia which seem to be dependent upon excessive emotional display on the part of the child The diagnosis of the condition and its differentiation from primary dyspepsia or from dyspepsia due to infection, with secondary nervous unrest is not always easy *But to* determine the cause of the failure of nursing *in the first* few weeks of life is often enough difficult The pity *is* that it is sometimes not even attempted

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A SOMERSET CENTENARIAN —Mr F W *Stubbins*, of Worle celebrated the 102nd anniversary of his birthday on July 18th

SOME PRINCIPLES OF PLASTIC SURGERY

INCISIONS CONTOUR, AND THE SUTURE

BY J L AYMARD M R C S, L R C P LOND,
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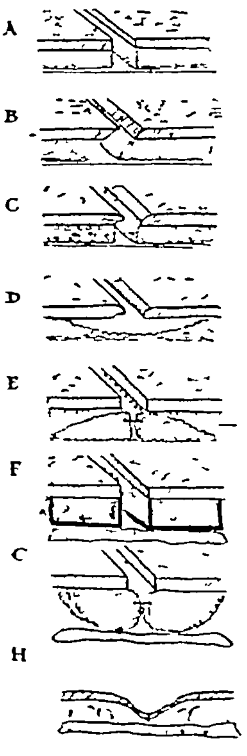
THE prime factors of artistic work in the department of plastic surgery are the restoration of contour and the correct method of suturing The disappointing appearance of much careful plastic work is vaguely recognised by the untrained observer who has any artistic perception, the trained artist sees at once that the essential thing which is so frequently absent from work which is otherwise admirable is the right degree of fullness which would have restored a flat surface to its normal contour

The three important factors, which I propose to deal with here necessary to bring about a contour as nearly normal as possible are first, the correct method of incising the skin, secondly, the manipulation of the deeper structures, and, thirdly, the best method of bringing about satisfactory union The other equally important factors, such as freedom from sepsis, condition of patient, &c, are already well known

The Skin Incision

In dealing with the question of skin incision we are, as far as I know, limited to two methods the one in which the skin is divided at right angles to the surface and the other upon the slant The latter method was fully described in THE LANCET some 11 years ago[1] and demonstrated by me in Sir Arbuthnot Lane's clinic at Guy's Hospital. Two years later it was discovered by the Germans and later by the Americans in each case without acknowledgment Having practised this incision continuously since this period, I may be permitted to draw attention to its value again, especially since it is now so frequently used in plastic surgery in this country to-day

FIG 1.



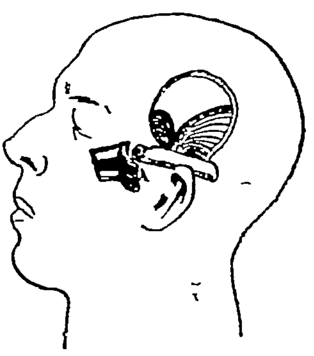
A Ordinary incision at right angles to surface of skin
B Author's incision upon the slant
C Appearance assumed immediately after incision
D To demonstrate undercutting of skin
E Ordinary fat flap
F Author's deep tissue flap incision for
G Author's deep-tissue flap rolled in position
H Deep scar with loss of tissue

A, Fig 1, is intended to represent the usual incision at right angles to the surface, B, that in which the skin is incised upon the slant At the moment of incision the actual appearance is doubtless as represented but almost immediately the condition of C is produced The upper flap assumes a curved form and the under one a convex The actual edge of the skin of the upper flap presents an appearance (not illustrated) resembling the cutting edge of a saw and not unlike a fringe This condition is due to the fact that the skin is not flat but on the contrary, a series of ridges and holes This ragged edge must often have been observed by surgeons when commencing the incision for a Thiersch graft The surgical importance of the contracted rolled in edge of the upper flap is that it is liable to be cut off if the knife is introduced twice instead of making one clean incision My slanting incision is very suitable for incisions in the neighbourhood of the cheek the mouth the chin and the forehead but around the eye and in the neck where the skin is loose and mobile the right-angle one is the more suitable

Method of Dealing with the Deeper Structures

Having dealt with the skin incisions, we have next to consider how the deeper tissues must be dealt with in order to fill up the gap produced by the excision of a depressed scar as illustrated at H, Fig 1. Leaving out the question of free grafts and the introduction of foreign bodies, we have only the fat and neighbouring tissues to make use of Provided the depression is only slight, simple undercutting, as represented at D may suffice A common method, however, is to undercut the skin and divide it from the fat as represented by the dotted line in E, rolling it together as shown, but the method I much prefer and now almost always employ is shown in F The thick black lines represent the undercutting straight down to the bone, and in the direction of the arrow marks up to the skin, the block is thus dependent upon the skin flap for its blood supply These blocks of tissue can then be easily rolled inward, as G, and secured with catgut, thus filling up the gap and restoring the contour

FIG 2



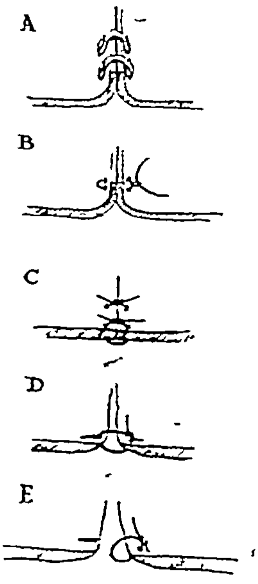
Major H D Gillies's temporal muscle flap

An ingenious method of deep-tissue adjustment is that devised by my colleague, Major H D Gillies, to fill up depressions caused by loss of malar bones The diagram, Fig 2 shows how he partially separates, and turns down under a bridge of skin, a portion of the temporal muscle I have seen some excellent results due to the employment of this method

Method of Suturing

The next question is how to adjust the skin Until fairly recently I have endeavoured to bring the edges of my incision into perfect apposition with the hope that they would so remain but, in a large plastic operation with the knowledge that I should have to recognise that the result was ordinarily successful if as many as two-thirds of my sutures held in position, taking into consideration all the troubles so frequently attending such an extensive operation, I am now satisfied to sacrifice any immediate cosmetic appearance in the theatre for what I know to be the better method of attaining an ultimately good result I have long suspected that the appearance of a wound two days after operation was deceptive—that is to say, that whilst the interrupted suture still held the cuticle only was in contact and that a condition resulting in D, Fig 3, was in fact, in existence to be followed by E or in the long run the alternative of an otherwise unaccountably wide scar

FIG 3



A, Michel's clip as ordinarily used
B, Mattress suture now extensively used by author
C, Interrupted suture.
D Appearance of skin edge with slight tension
E, Complete break-down appearance of

Every general surgeon must have been struck by the small linear scar invariably produced by the use of the Michel clip, A Fig 3 which is clearly due to the apposition of a substantial surface of the two edges which subsequently stretch into approximately the normal position. Whether the skin be cut upon the slant or at right angles I now almost entirely employ the mattress suture (B Fig 3) which gives the same result as the Michel clip The clip is not suitable for the face because it occupies too much space and is difficult and painful to remove in this region The mattress horsehair suture, on the contrary, cuts quickly through the cuticle, but holds the deeper tissues until union is secured, despite moderate tension and even suppuration, should it occur This, however, is not meant to imply that I neglect in the least the additional safeguard of that most valuable adjunct in plastic surgery—the relaxation suture, whether in the form of the corrugated vulcanite disc with silkworm gut or my wire and clip method

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[1] Invisible Surgery by J L Aymard THE LANCET May 12th 1906

A METHOD OF APPLYING ANTISEPTICS TO THE DEEPER PARTS OF WOUNDS

BY THOMAS H KELLOCK, M C CAMB , F R C S ENG ,
CAPTAIN, R.A M C (T)

THE multitude of septic wounds at the present time, which occupy the attention of so many medical men, has very naturally given rise to the use of a variety of antiseptics and many methods of application. To judge of the efficiency of the former due attention should be paid to the latter, and it is obviously unfair to judge of the value of an antiseptic when it is only applied to the part of a wound that is visible In every wound of any magnitude there must be recesses and deep parts into which, however well such a wound may be drained, the antiseptic applied in this way never reaches and where organisms may collect and multiply unmolested.

The Carrel method of irrigating wounds has done a good deal to improve their treatment and has drawn attention to the advantage of applying antiseptics to the deeper as well as to the more superficial parts of wounds The method, however, has certain disadvantages The tubes generally used are perforated with round holes for some distance from the closed end, and if there be much resistance to the exit of fluid at the deepest part the solution finds its way through the openings nearer the surface of the wound and so the deeper parts are not reached

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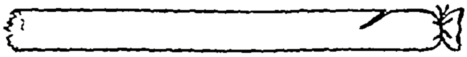

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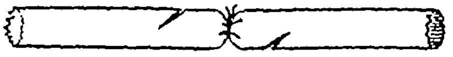

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A question on which I have not yet been able to satisfy myself completely is whether wounds treated in this way should be drained If free drainage is provided, the antiseptic fluid very readily finds its way to the surface and is absorbed by the dressings, and so is not able to remain in contact with the real surface of the wound I have sometimes thought that the best results have come about when the drainage is not free The walls of the wound then remain open and the mixture of pus and antiseptic fluid is brought into contact with the suppurating surface at all points

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The ground behind the patient's house is soaked with sewage, there being no drainage system there I have mentioned this case to several of my London colleagues, but can find no parallel thereto The one attack of general diphtheria did not confer any immunity against the local affection I venture to state that this complication of a squint operation is excessively rare if not unique

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THE following case is recorded as a problem in diagnosis

Patient, girl, 6 years of age No evidence of other cases in family Mother and father both healthy When patient was 2 years of age a slight fit, with loss of consciousness, occurred, apparently complete recovery Four months later the child began to drag right foot along the ground, since then progressively getting worse till whole of right side of body was noticed to be affected Occasional vomiting occurred Bowels always regular A week ago she had another fit, leaving an apparent palsy of all the eye muscles Vomiting took place occasionally I was called in to see the child, as it was supposed that symptoms, &c , were due to a tumour near the quadrigeminal bodies

State —The child in poor general condition, lying in bed on right side, and complaining of localised pain over left occipital region which had been present for four days Mental condition quite clear, but speaks in a monotone and answers quickly and rationally The right hand is held in left hand, and moved about by latter Head measurement 50½ cm , regular in shape Examination of cranial nerves 1 Smell sense delicate—not the slightest impairment 2 No change in optic nerves and fundi , fields of vision normal Vision normal 3, 4, 6 Right side Pupil dilated and movements in all directions impaired , moves more than left Slight exophthalmos Left side Eye apparently immovable, but on persuasion child moved eye slightly in all directions Reaction to light good , reaction to accommodation could not be determined 5 No loss of sensation 7 Supranuclear lesion on right side , left side apparently normal 8 Hearing normal on both sides 9 Taste normal 11 Unaffected 12 Deviation to right side when tongue is protruded

Right arm Kept flexed over chest Some active flexion and extension of elbow and distal joints Grasps hand well but weakly Tendon reflexes absent No loss of sensation Arm, forearm, and hand muscles definitely atrophied Left arm Loss of tendon reflexes, but otherwise normal in all its movements, not showing an intention tremor Trunk Normal sensation Abdominal reflexes right side are absent, but are brisk on left side Sphincters normal Right lower limb Definite paresis compared with left Knee jerk absent, other tendon jerks also absent No ankle clonus Hallux erectus present Definite disuse atrophy present, limb is 2 5 cm shorter than its fellow No loss of sensation Left lower limb Stronger than right Movements well coördinated Knee jerk and other tendon jerks absent Ankle clonus absent Babinski's sign Extensor response

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Fits, intense headache, occasional vomiting and the eye symptoms suggested intracranial pressure, but of this there was no evidence on further investigation Friedreich's disease, with which much of the condition agrees, is excluded by the absence of definite ataxia and of hereditary transmission

Buenos Aires

PETROLEUM IN THE TREATMENT OF PYORRHŒA ALVEOLARIS

BY H J CORIN, L D S

THE treatment of pyorrhœa alveolaris should be undertaken by the dentist only in conjunction with the patient s medical adviser, since pyorrhœa is now commonly acknowledged to be aggravated by, if not actually due to, causes other than dental It is, for instance, in many cases primarily induced by the absorption of toxins from a septic small intestine, a condition which obviously needs skilled medical attention.

For such a condition purified petroleum is used widely and successfully, both in those cases where surgical interference is necessary, and also in those more common instances where no operation is required Most probably the therapeutic action of petroleum is known to the vast majority of medical men , but I would like to emphasise the caution given some time ago in this journal after various investigations,[1] that only the purest oil should be administered

In a case where there was only a slight discharge of pus from the gums one course of local treatment, the use of an effective mouth wash and the patient ordered to take petroleum emulsion, produced a complete cure The patient was unable to come to town for six weeks after treatment but seen at the end of this period there was absolutely no trace of discharge

For long standing cases where there is a large discharge I have found petroleum with guaiacol to give wonderful results in clearing up the conditions quickly, and when there is acute gingivitis petroleum with salol is useful After my experience I can confidently recommend this method of treatment as effective in many instances where other methods have failed

Old Burlington-street W

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[1] Vide THE LANCET Oct 2nd and 16th 1915

Reviews and Notices of Books.

Organic to Human Psychological and Social By HENRY MAUDSLEY, M.D Lond London Macmillan and Co , Limited. 1916 Pp 386 Price 12*s* net

THIS latest work by Dr Maudsley is fully worthy of the high reputation that has for long placed him in the front rank of contemporary scientific thinkers and writers on mental processes in health and disease His first book, the "Physiology and Pathology of Mind," published hard on half a century ago, showed his mastery of all then available knowledge of the structure and functions of the human nervous system, no less than his signal capacity for thinking scientifically It contained, moreover, the germs of much that its author has since from time to time given to us in his well known works expanded and illustrated by further experience and mature reflection Even as Dr Maudsley's earliest work drew the attention of philosophical thinkers more than that of practising medical men, so probably will this latest book appeal mainly to the scientific student of psychology and sociology whether without or within the ranks of the medical profession It must, indeed, be considered chiefly as an important contribution to the still vexed controversy between the warring schools of "materialists" or "mechanists" on the one hand, and of "vitalists" or "spiritualists" on the other Justly pre-eminent though Dr Maudsley is as an authority on the subject of insanity, and much as his other work owes to his practical knowledge and experience in this special study, his most enduring title to fame will be that of the scientific philosopher who in his day and generation consistently and persistently upheld the principle of the unity of the human organism and its continuity with the rest of Nature's processes

A true psychology ' (says Dr Maudsley in the first chapter of the book before us) "must be founded on a clear and distinct recognition of the essential continuity and constant flux of things in which all so-called causes are effects and all so-called effects causes mind be conceived in thought as a part of the nature which its organisation is in fact Continuity of motion without end, the perpetual flux which such old Greek philosophers as Democritus, Heraclitus, and Epicurus insisted on, and Lucretius poetically expounded that is the fundamental fact the world never the same for an instant, nor two minds ever the same, nor any mind ever the same for a single hour "

Again —

"Into the composition of every idea, of every mood, of every act, of every reflection, every organ and every gland of the body has entered essentially , the minutely different structures and physico-chemical changes and exchanges of the parts in different persons producing different temperaments, and the signally special organs of male and female bodies different mental qualities requiring their special direction of development and function To deride the notion of mechanism as anywise applicable to life and life in mind is the natural error of him who, ignorant of the exquisitely subtile physical and chemical precesses at work in the simplest vital substance, thinks grossly only of inert matter and its mechanism as exemplified in the structure of a wheel barrow or a steam engine "

One more quotation must suffice for the purpose of indicating some of the main lines of thought in this book —

"That all positive intelligence is sense-evolved, though true, is not the whole truth motor reactions contribute as essentially as sensory impressions to the construction of a mental organisation and fitly respond to them in the complex composition of ideas and judgments The old saying, *Nihil in intellectu quod non prius in sensu* might indeed be fitly supplemented by the addition of *et in motu* "

It is clearly apparent that no adequate criticism of the main arguments of this book is possible within the limits of this notice Even to attempt it would involve a useless plunge into a troubled sea of dispute. But this much may be said in some justification of the high degree of value which we attribute to it The least biassed thinker on matters psychological, who is dissatisfied with any theory concerning mental phenomena which involves the importation of a purely imagined and unverifiable agency in explanation, but still may find some difficulty in regarding such phenomena as natural products of organisation, is at least likely to discover, after carefully studying Dr Maudsley's book, that part, if not all, of his difficulty is lessened or removed The case for cuticle but holds the deeper tissues until union is secured, despite moderate tension and even suppuration, should it occur This, however, is not meant to imply that I neglect in the least the additional safeguard of that most valuable adjunct in plastic surgery—the relaxation suture, whether in the form of the corrugated vulcanite disc with silkworm gut or my wire and clip method

A METHOD OF APPLYING ANTISEPTICS TO THE DEEPER PARTS OF WOUNDS

BY THOMAS H KELLOCK, M C CAMB, F R C S ENG,
CAPTAIN R.A M C (T)

THE multitude of septic wounds at the present time, which occupy the attention of so many medical men, has very naturally given rise to the use of a variety of antiseptics and many methods of application To judge of the efficiency of the former due attention should be paid to the latter, and it is obviously unfair to judge of the value of an antiseptic when it is only applied to the part of a wound that is visible In every wound of any magnitude there must be recesses and deep parts into which, however well such a wound may be drained, the antiseptic applied in this way never reaches and where organisms may collect and multiply unmolested.

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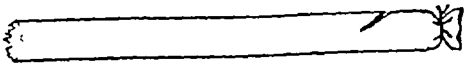

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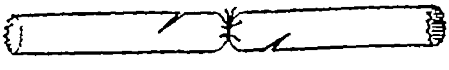

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[1] Vide THE LANCET, Oct 2nd and 16th, 1915

It must be noted that most modern biologists will disagree with Dr Maudsley in the view which he still holds, in common with that of Spencer, that mental organisation has been evolved by the successive registration of individually acquired ideas in the hereditary constitution of the race But it is not needful to enter into the dispute about the modes of reproduction of so called "acquired" qualities in order to form a due judgment as to how far Dr Maudsley's main position depends for its validity on the views he holds on this point A careful study of this book will show that even were Dr Maudsley an opponent of the Spencerian doctrine his main conclusions would not lack due support The view that mental action is a function of the organised nervous system may be held consistently by Darwinians and Lamarckians alike

Every chapter of this book is highly interesting, instructive, and full of suggestive thought, revealing the same mental vigour that marked his first volume, the study of which was recommended by the late Walter Pater to a candidate for classical honours at Oxford as a help to straight thinking

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JOURNALS

Journal of Anatomy Conducted, on behalf of the Anatomical Society of Great Britain and Ireland, by Professor THOMAS H BRYCE, Professor EDWARD FAWCETT, Professor J P HILL, Professor G ELLIOT SMITH, and Professor ARTHUR KEITH Vol LI, Part III April, 1917 London Charles Griffin and Co Annual subscription, 21*s* post free —A high level is reached in the present issue of this journal, and the society is much to be congratulated upon the fact that the war time work of anatomists in Great Britain and Ireland, as echoed in its Journal, has placed recent issues increasingly ahead of those produced in the calm years before 1914 The long paper on the Development of the Hypophysis Cerebri, Pre oral Gut, and Related Structures in the Marsupialia, by Miss Katherine M Parker, has been accepted as a D Sc thesis by London University It emanates from the laboratory of Professor J P Hill, of University College, London, and makes another addition to our knowledge of the anatomy of a dying fauna, the proper understanding of which owes so much already to the same fostering care —Dr W Colin Mackenzie adds another paper to his Studies on the Peritoneum and Intestinal Tract in Monotremes and Marsupials, and apart from the record of the conditions present in these animals there are the deductions of a medical man accustomed to look for explanations of human conditions in the phases of phylogeny displayed in lowly creatures —A paper of clinical as well as anatomical interest is that of Dr J S B Stopford, which constitutes Part III of his Investigations on the Arteries of the Pons and Medulla Oblongata This is a sound anatomical contribution to practical medicine and surgery, and we should like to see all three parts published as an entity for the use alike of anatomists and clinicians —In the same category falls the contribution of Captain J L Aymard, R A M C, upon Some New Points on the Anatomy of the Nasal Septum and their Surgical Significance for this, too, is a paper which applies the findings of pure anatomy to direct surgical utility Dr Una Griffin at the Cambridge Hospital, Aldershot, cut and fixed for Captain Aymard some sections of the septum of the sheep, in one of which the complete circulatory system of cartilage is exemplified, the specimen showing distinct canals leading to the centre of the cartilage —Dr S Rutherford Macphail adds a short but useful note on the length of the vermiform process in 220 consecutive post mortem examinations He finds that the average length is 99 2 mm (3 97 inches), and that in the male the process is slightly longer than in the female —Professor M Amin Abdel Rahman, of Cairo, gives an account of a case of complete transposition of the viscera in an aged Egyptian male subject —The Proceedings of the Anatomical Society are appended to this issue, and apart from their value as a record of the work of the society they contain a résumé of Professor E Fawcett's communications on the developing chondrocranium. This résumé, brief though it is, constitutes the best published account of the stages of early skull formation available to students at the present time

# Reports and Analytical Records
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INTRAMUSCULAR GALYL

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HITHERTO galyl for intramuscular injection has been given with an oily excipient which had certain well known disadvantages, the absorption was relatively slow, the application was inconvenient, and frequently gave rise to pain Galyl is now prepared for intramuscular injection in the form of a sodium salt in a weak solution of glucose and is identical with the intravenous preparation as to effect and dosage The preparation is a brown fluid contained in ampoules of 15 cubic centimetres capacity We note that there is some separation of oily globules in these tubes As is well known, this organic phosphoric arsenic compound has been used in the abortive and therapeutic treatment of syphilis, recurrent typhus, and sleeping sickness Clinical reports of the cases have appeared from time to time in our columns

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Teekoe is suggested as a substitute for tea, coffee, and cocoa, and as it is much cheaper than these commodities the suggestion is worth some attention Made in the same way as tea it yields a clear brown liquor which has a slight but attractive bitter taste resembling that of the cocoa nib It is important to note that this infusion contains an appreciable amount of theobromine, which, as is well known, is closely allied to caffeine, the alkaloid of tea to which the refreshing and stimulating properties of tea are largely attributed We extracted from "teekoe" just 0 5 per cent of theobromine, it also contains 5·40 per cent of fat The preparation yields 27 3 per cent of soluble matters to cold water It is practically free from tannin, the popular bugbear of tea Further, it may be tolerated by those with whom the better known beverages may disagree, whether or no tannin plays a part in their trouble The basis of the preparation is, according to our examination, ground cocoa shell. We remember this being used for the production of a beverage some years ago, and now that tea and coffee are costing very much more than they did before the war those bent on economy might be induced to give this substitute a trial It certainly contains more nutritives than tea or coffee

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THE LANCET.

LONDON SATURDAY SEPTEMBER 1, 1917

The Future of Medical Education

"I TAKE it," said HUXLEY, "that the whole object of education is in the first place to train the faculties of the young in such a manner as to give their possessors the best chance of being happy and useful in their generation, and in the second place to furnish them with the most important portions of that immense capitalised experience of the human race which we call knowledge of various kinds" HUXLEY was speaking of the essentials of education without regard to specialisation. He was considering, in fact, how the young could best be trained, so that having become possessors of "most important portions of capitalised experience,' they could turn their acquisitions to a good account for the race and incidentally for themselves as citizens We published last week in the Students' Number of THE LANCET a guide to the various curriculums by compliance with which the medical student is transformed into the medical practitioner In considering these various educational schemes, which, though differing in detail somewhat, are of the same general and standardised pattern, we are led to ask how far this pattern complies with HUXLEY S requirements

The feeling among many thoughtful teachers, both those concerned only and those not concerned at all with medical education, is one of dissatisfaction with the existing scheme, even while allowing its virtues, and, in particular its possibilities A glance at what is required of the medical student to day, as set out in our Students' Number, explains that feeling, which is founded upon the knowledge that the curriculum is too crowded This is shown by the number of candidates for admission to the medical profession, who, failing in the early tests, lose their stride in the race, and take as much as 15 per cent of the years when they might be doing a man s work in obtaining the hall mark qualifying them to do that work legally In most cases of this sort the education which the student received in the ordinary manner at a secondary school proved not to be designed to assist him in his future specialised or professional education There is no common opinion among educational authorities that we have here the only, or even the greatest default in the education of the medical student, for a certain number of such authorities in pointing to the success of a few, and sometimes reminiscent of their own academic achievements would have us believe that the possession of considerable academic knowledge, classical or mathematical is the ideal introduction to medicine But those who think so now must be small in number and blind to the impossibility of working out any general plan of medical education on a foundation which takes so long to lay, which is often so untruly laid, and which is so little adapted for erection thereon of applied medical knowledge That literæ humaniores and pure mathematics form the necessary basis of both the literary and the logical sides of the study of medicine no one denies—they stand in this relation to specialised knowledge of every description, but alongside of their study, in the case of the medical student, there must be room for the pursuit of general applied science, for it is on the application of his familiarity with the main teachings of natural philosophy that comprehension of medical principles depends When the medical student has obtained an education based on the public school ideal—which does not mean the public school average performance—he finds himself devoid of acquaintance with a whole set of important subjects which he must master before he can confine his efforts profitably to medical fields He must have certain branches of general science at his finger s ends before he can realise what the science of medicine is, or what is the significance of any problem in pathology If the cult of classics and pure mathematics is allowed to comprise the medical student's education until he leaves school, so that he wants at least another year in which to grasp the principles of natural philosophy before he arrives at anatomy and physiology, which sciences in their turn are to make pathology have a real meaning for him—if all this, medical education must remain a very long business, and that is exactly what cannot be contemplated calmly at this moment, with the lessons of war staring us in the face

There can be no doubt in our mind that while between the ages of 14 and, say, 17 all education should be primarily directed to the training of faculties on some general system, at 17 those who are able to make up their mind that they intend to adopt the profession of medicine should find it possible to take advantage of a scheme of specialised training At all public schools the study of formal science ought to be made available after the age of 16 or so, in this way the able and intelligent boys who have the intention or the bent to become medical men would receive in their scientific training that sort of systematic instruction which they would be receiving if they had pursued a classical or mathematical course—that is to say, if they had followed what is really the specialised course of many schools There will always be a number of men who acquire medical knowledge after having gone very far in other directions and it is a capital thing that there should be such, for more than often, when they have covered themselves with school and university honours, they proceed to adorn our ranks particularly, but this fact ought to be regarded as the extraordinary way of achieving distinction in the profession of medicine, and not as an argument for making the careers of these exceptions the pattern for our medical students in bulk Our students must be able to start earlier on their special work, and with a more firmly laid foundation, but this is not to say that the general education of their youth is to be neglected

The training of naval cadets, which used to commence almost in the nursery, and even now deals with material selected when very young, has been taken by educational experts as a proof alike of the good and the evil that may emerge from early specialisation, but the opinion of many who have given great attention to this matter is, we believe, that the individual officers would benefit, and that the Navy would not suffer, if the time limit for entrance into the Senior Service were raised by as much as three years To us it seems that this is probably true, and that the age thus suggested—namely, 16½ to 17—is about the age when schoolmasters, parents, and boys themselves might well be asked to decide if the boys intend to become medical men And if the answer is in the affirmative these boys should have the opportunity while still at school of getting the training that they want The supply of medical men will be an urgent consideration for the General Medical Council at the termination of the war As the standardising authority over the medical education of the whole of the country the Council must, of course, do justice to those parts of the country where the facilities for scientific training are hard to come by, and this is a matter which, it will be at once admitted, bristles with difficulties But the difficulties should be attacked At the present time, a critical time in the history of national development, our medical students are not obtaining the education postulated by HUXLEY'S wisdom—ever direct and simple, their faculties are not being duly developed, and they are not furnished at a sufficiently early stage in their careers with the capitalised experience that would be most important for their future They make good, but with waste of time

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The Effect of the War upon Psychiatry in England

ONE of the results of war on the colossal scale of to day has been the appearance in military and civilian hospitals and analogous institutions of mental and nervous cases by, literally, thousands The welcome sequel has been a quickening of interest on the part of the medical profession as a whole in these types of case, of which in many instances the medical practitioner was little qualified either by education or by previous experience to take cognisance Not *only* has the specialist had abundant opportunities of increasing his knowledge, theoretical and practical, it has been gratifying to take note of the large number of useful contributions published in one journal or another by observers who would not describe themselves as expert neurologists or psychiatrists Indeed, it is this latter fact that is significant, for it may mark the beginning of a general movement for the abolition of a long standing reproach The medical profession, including many of its younger members, has been brought into contact with phases of mental and nervous disturbance to a degree hitherto impossible, has realised its lack of learning, its unfamiliarity with the subject, due in part at least to seriously inadequate teaching, and as a result has determined to acquire information while the occasion continues An outcome of this revived interest is undoubtedly the expression of dissatisfaction with the existing methods of handling such cases in civilian life We do not misrepresent the situation when we state that the average neurologist has, as a rule, been preoccupied with organic nervous disease to the exclusion of functional disease, while the psychiatrist, attached to an institution, has had little or no chance of studying, and no incitement to study, mental disease in its early manifestations A hard and fast line cannot be drawn between the two sister branches, but an important group of borderland cases, coming, theoretically, under the purview of one or other, has been in large part, intentionally or unavoidably, ignored Not otherwise can we explain the persistence of the gross anomalies and unworthy neglect still characterising the measures in vogue for dealing with such cases In our columns[1] we have repeatedly drawn attention to the inferior position we occupy among the nations in our attitude towards psychiatry And we know well it has been a bitter experience for those who have laboured to remedy these defects that so little has been accomplished

But the war is changing things Special medical boards have been appointed to deal with neurasthenic cases, and the retention in or discharge from the army of the victims of shock and nervous disturbance Everywhere the practitioner of medicine is meeting with the "shell shocked" soldier, and though he may be conscious of his own inability to treat such a case out of a full experience, at least it is borne in on him that the patient cannot be left to his own devices The determination to deal with such cases adequately has been manifested both by the medical profession and the public, and the outcome of their awakening has been the establishment of a number of special hospitals all over the country, some of them due to private generosity, as in the case of Mr JOHN LEIGH'S recent gift of Brooklands, near Manchester These are doing excellent work and achieving praiseworthy results, but the problems of "shell shock" are neither new nor mysterious, they are the everyday problems of the "nervous breakdown." The admission of the necessity of places for the suitable reception of such cases when occurring in the Navy or Army, and their prompt organisation, have painfully emphasised the insufficiency of our present methods for dealing with such cases in civil life and the unjustifiability of our neglect In this connexion we wish to draw our readers' attention to a small book, recently published, with the not sufficiently indicative title "Shell Shock and its Lessons"[2] The lessons which this book sets out to inculcate all go to prove the urgency of reforming our treatment of the mentally afflicted For the authors find that exactly here mediæval traditions are still encumbering English psychiatry; indifference, inertia, and lack of knowledge are still all too apparent, obstacles are still being raised through our national obstinacy and our devotion to such catch phrases as the "liberty of the subject" It is an ironical comment on the situation that the little volume is written by a professor of anatomy, in collaboration with a reader in psychology who is not a member of the medical profession

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[1] THE LANCET April 6th 1912 Nov 8th 1913 and June 6th and Nov 7th 1914

[2] Shell Shock and its Lessons By Professor G Elliot Smith and T H Pear Longmans, Green and Co 1917 2s 6d. net.

In language that is no whit too strong they pillory the British attitude towards the treatment of mental disorder and show that the blend of apathy and ignorance with which our country has too long regarded these problems is rapidly becoming our exclusive distinction But the war has compelled us to deal in a modern, scientific fashion with borderland cases and early mental cases among sailors and soldiers, and if our medical profession handle such cases in numbers and restore them to normal life with conspicuous success, we cannot believe that measures of this kind will be restricted in future to the Services and will hold good only "for the duration of the war" On the contrary, we are convinced that the widespread interest which part at least of the medical profession is evincing in nervous and mental disease will render any reactionary steps impossible, reconsideration of our methods of teaching and demonstrating in these subjects will follow

The Economical Use of Medical Officers in the Army

A COMMITTEE has been appointed by the Secretary of State for War to proceed to France to inquire into the administration of the Army Medical Service The committee is composed as follows —

Major General Sir FRANCIS HOWARD (chairman),
Sir RICKMAN GODLEE,
Sir FREDERICK TAYLOR,
Sir W WATSON CHEYNE, M P,
Lieutenant Colonel H J STILES,
Dr NORMAN WALKER,
Dr CHARLES BUTTAR, and
Dr J B CHRISTOPHERSON (secretary)

The committee was appointed mainly at the instance of the Central Medical War Committee, and fittingly includes in it Dr BUTTAR, the chairman of the Executive Subcommittee of that Committee, three prominent representatives of the Committee of Reference of the English Royal Colleges, and the convener of the Scottish Medical Service Emergency Committee Its personnel is strengthened by the inclusion of Lieutenant Colonel STILES, and the secretary, Dr CHRISTOPHERSON, whose professional qualifications cover between them a very large field We are glad to learn that the investigations of the committee will be extended to the United Kingdom, for it is in the personnel of the medical officers of the Army at home that most of the debates on the economical distribution of medical service have had their origin It is here that the particular knowledge of the Medical War Committees will have full play, and there is a good case for making the representation of the Central Committee a larger one

Annotations.

"Ne quid nimis."

THE ORDER OF THE BRITISH EMPIRE

AMONG the 268 appointments to the new Order conferred on "persons, male or female, as may have rendered or shall hereafter render important services" to the British Empire appear the names of five medical women and eight medical men We give the complete list of these on p 360 Lieutenant Colonel Edward Stewart, who becomes a Knight Commander of the Order, is medical assessor to the Red Cross in France The services of the five women who become Commanders have been varied and conspicuous Dr L Garrett Anderson is well known as the organiser of a complete hospital unit in France, and Dr Flora Murray as officer in charge of this unit after its return to this country and settlement at Endell street Lady Barrett and Dr Mary Scharlieb have been active in socio medical work of many kinds Mrs Chalmers Watson is chief controller of the Women's Army Auxiliary Corps, which undertakes important replacement duties at home and abroad But over and above these well merited honours for the holders of medical qualifications we are glad to see in the composition of the Order welcome signs of the increasing recognition of many important healing agencies The matrons of four of the metropolitan hospitals—Miss M Hogg, of Guy's, Miss E C E Luckes, of the London, Miss A McIntosh, of St Bartholomew's, Miss A L Still, of St Thomas's—along with Sister Pauline, of the Italian Hospital, are admitted to the Third Class, where the name also appears of Miss Margaret MacMillan, justly famous in connexion with open air day nurseries Mrs Mabel Dease, with other officers of the Welfare Department at the Ministry of Munitions, becomes an Officer of the Order in recognition of work as important in its wideness of range as that of Mr R J Parr, director of the National Society for the Prevention of Cruelty to Children Among the higher distinctions we are glad to see the names of Lord Sydenham, the efficient president of the National Council for Combating Venereal Diseases, and Sir Arthur Pearson (Knights Grand Cross), along with those of Mr Cyril Jackson and Mr A R Yapp (Knights Commanders), whose work in connexion with the Pensions Statutory Committee and the Y M.C.A huts respectively has had beneficent results on an incredibly large scale In the person of Dame Katherine Furze, as commandant-in chief of the Women's Voluntary Aid Detachment, that agency receives the highest official honour, which is not more than its due The names of some well known chemists also figure in the list Professor Herbert S Jackson is chemical adviser to the Optical Research Branch of the Ministry of Munitions, and the honour conferred upon him is a recognition of his admirable work in the making of optical glass Professor H. Brereton Baker a member of the Trench Advisory Committee, is known in connexion with the prevention and alleviation of irritant gas poisoning The work of Professor W H Bragg, who is attached to the Board of Invention and Research at the Admiralty, on the structure of crystals as revealed by X ray examination and on radio activity has brought much of promise for the future The first named becomes a Knight Commander, the two latter Commanders of the Order

BUBONIC PLAGUE

SHIP BORNE plague not infrequently makes its appearance at British ports during the months of August and September Last year the disease manifested itself at three seaport towns—namely, Bristol, Hull, and Liverpool—but fortunately, thanks to the energetic preventive measures taken by the port sanitary authorities, there was no spread of the malady[1] This year there have already been two instances of the arrival of steamers at our ports with cases of plague on board, which may be briefly summarised thus

The first of these was in May, when the ss *Sardinia* called at Falmouth and reported that her captain was sick The ship was from Australia, but had called at Bombay, where she loaded a cargo of grain, and also at Marseilles, where part of her cargo was discharged On inquiry being made it was found that the captain's illness was of a *non infectious* nature, but that two lascar members of the crew were suffering from what was supposed to be mumps The ship sailed for the Thames, and the two suspected cases of mumps having died almost immediately, were forthwith buried at sea On arrival at Gravesend three cases of plague were discovered on the *Sardinia*, one of which proved rapidly fatal, whilst the remaining two were promptly removed to the port hospital at Denton Some days later two of the contacts developed the disease and both died They had occupied bunks adjacent to that of one of the previous fatal cases In the light of subsequent events, there does not appear to be any doubt that the patients who had been supposed to be suffering from mumps were really cases of plague, and, on this assumption, there was a total of seven plague cases, of which five had a fatal termination

The second instance of the arrival of ship borne plague during the course of the present year occurred on August 13th, when the ss *Matiana* from Bombay arrived at Gravesend The vessel had called at Falmouth on August 11th, but no cargo was discharged and no passengers were landed at that port Prior to the arrival of the ship, between July 14th and 28th, nine cases of bubonic plague, with six deaths, took place among the crew, the bodies being buried at sea Three convalescents were taken off the ship at Gravesend and removed to the port hospital, while the remaining members of the crew were kept under medical observation Another case occurred among these contacts which resulted in the death of the patient There were in all 10 cases and 7 deaths The ship was detained at the official mooring station off Gravesend, and the cargo was discharged into lighters under the supervision of the medical officer of health of the Port of London Sanitary Authority

We understand that in the case of each of the above mentioned vessels partial disinfection of the holds had been carried out at a port of call before their arrival at an English port and before their cargoes had been discharged There is a suggestion from these facts that the fumigation of the vessels at an intermediate port may have had the effect of driving infected rats from the holds into the living quarters of the crew, and this would account for the late development of plague on board these ships some weeks after leaving Bombay We understand that these occurrences are being officially investigated, and no doubt the details will in due course be published The occurrence of plague cases on board ship need not give rise to apprehension so long as the sanitary administration of the port at which the ship arrives is efficient in character and all the proper preventive measures are rigorously carried out Such measures, of course, include prompt removal of the patients to hospital, the keeping of all contacts under medical observation for some days, the employment of means to prevent access of rats from the ship to the shore during discharge of the cargo, thorough disinfection along with destruction of rats on board the vessel after discharge of the cargo, and systematic rat destruction on the docks, wharves, and warehouses so as t minimise the danger of spread of the diseas among these rodents should an infected rat escap from the ship to the shore A sanitary survey o the ports of England and Wales is at present bein carried out by the medical inspectors of the Loc Government Board, the necessity for such actio being well illustrated by the occurrences to whic we have referred

INFANT MORTALITY IN AUSTRALIA

THE report on infant mortality which has jus been issued by the Commonwealth Committee o Death and Invalidity (C 3499, Government printe Melbourne) is a document of the greatest interes inasmuch as it records the experience of our ow kith and kin under conditions less fixed by habi and custom, and a careful study of the result cannot fail to shed some light on the solution o the same problem in this country The repor starts off with a comparison of the infant mortalit rate in various countries, using as a basis the mos recent available five years' average Russia and Hungary head the list with 254 and 204, New Zealand is the lowest with 59, while the Commonwealth figure of 72 is bettered only by Norway with 70 When the Commonwealth figures are further analysed into their constituent parts, Queensland and South Australia, with 67 and 65, both excel any European country While the rate has dropped steadily in New Zealand during the 45 years of observation, it is only since 1903 that there has been any marked decline in the Commonwealth rate, except in South Australia, where the diminution—starting from the very high figure of 158—has been nearly continuous The fall has taken place chiefly in the urban areas, the reduction being similar in kind in the rural districts, but less than one half the extent, the committee concluding that the same factors are operative in each but to a differing degree It is very striking that the reduction has scarcely affected the rate for infants under one month old, which remains practically what it was, and always higher for boys than for girls In New South Wales, indeed, the first week of post-natal life has increased recently in risk The committee naturally attribute this early mortality of the new born child to the working out of ante natal causes, and devote a deeply interesting section of the report to a discussion of these causes They agree in the main with the conclusions of Dr Whitridge Williams, of Baltimore, who found syphilis, "unknown causes," difficult labour, prematurity, and toxæmias to account for 75 per cent of the early deaths, syphilis being certainly responsible for 25 per cent and probably for many more The problem of controlling ante natal causes of infantile mortality resolves itself, therefore, the report states, into (1) the control of syphilis, (2) the reduction of known causes, such as poverty and overstrain of the mother, difficult labour, toxæmias of pregnancy, and (3) further study of the large group of "unknown causes" The committee quote with approval the suggestion of Dr W Bruce, medical officer for Ross and Cromarty, who has proposed the confidential notification, within 24 hours, of the causes of death to the medical officer of health, in order to enable him to take any action necessary to add to scientific knowledge They urge on the Australian Government the desirability of applying on a large scale in a selected area an experimental scheme for reducing the infant mortality on the lines of that framed and enforced by the municipality of Villiers le Duc,[1] which has, so the report states, simply abolished the death-rate of infants Of the environmental causes of mortality operating most potently in the second and third months, pneumonia and the diarrhœa groups are dominant in Australia, while after the third month in order of frequency, pneumonia, bronchitis, diarhœa, enteritis, whooping cough, tuberculosis, and meningitis claim 75 per cent of the total deaths It is these environmental causes which have been reduced so largely during the last 15 years Australia may rest assured that we shall watch with interest the result of her efforts in the solution of the problem

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[1] See THE LANCET of Sept 9th, 1916 p 486

A NEW TREATMENT OF AMERICAN LEISHMANIASIS

Dr Edmundo Escomel, of Arequipa, Peru, has published a pamphlet from Buenos Aires detailing the promising results which he has obtained in the treatment of cases of American leishmaniasis with a solution of oxide of antimony in water and glycerine as prepared by Mr W Martindale, of London Dr Escomel notes that this solution keeps better than tartar emetic solution, that it can be administered subcutaneously, intramuscularly, or intravenously, and that no untoward general or local irritating reaction or complication was observed to follow its injection by any of these methods The record of the history and treatment of one of his successful cases is accompanied by photographs showing the appearance of the facial lesions before and after the course of treatment In this case there was extensive ulceration of the patient s foot, six months after the onset of the disease, when treatment was begun, the secondary lesions (which had started from the skin near the lips and contour of the nose) had invaded the whole nasal mucous membrane and the back of the palate The treatment was as follows —

On Sept 10th, 1916, a subcutaneous injection of 1 c c of the oxide of antimony solution On the 12th, 16th, 18th, 21st, and 24th intramuscular injections of 1 c.c of the same solution On the 26th 28th, 30th, and Oct 3rd intravenous injections of 1 5 c.c of the same solution On the 5th a subcutaneous injection of 1 5 c c of the same solution and a local application of tartar emetic powder to the nasal mucous membrane previously anæsthetised From this date until Dec 5th a repetition of the treatment as recorded above On the 6th an intravenous injection of 1 c c. of the oxide of antimony solution and on the 7th an intravenous injection of 2 c c , together with a second local application of tartar emetic powder to the nasal mucous membrane On the 9th an intravenous injection of 2 c c of the oxide of antimony solution, and from this date until Dec 24th intravenous injections of 1 c c In addition on the 23rd and Jan 2nd the patient was given massive injections of 6 c c of the oxide of antimony solution without any untoward local or general reaction being produced. Cicatrisation of the facial cutaneous lesions commenced on Dec. 6th, and by Jan 2nd the cure of these lesions was complete but the injections were continued throughout January and February to complete the cicatrisation of the mucous membrane The extensive ulceration of the foot healed completely without special local treatment

As a control to this case Dr Escomel describes and illustrates with photographs a case of facial blastomycosis in which the same treatment, carried on at the same time, failed to effect any improvement in the patient s condition, which became steadily worse as the disease continued its invading progress Dr Escomel sums up his conclusions as follows (*a*) The solution of oxide of antimony in water and glycerine has cured the cases of American leishmaniasis in which it has been used, (*b*) it does not produce the general effects nor the local irritant effect of tartar emetic, (*c*) it keeps well for a long time, (*d*) for these reasons it appears to be indicated as a substitute for tartar emetic in the treatment of American leishmaniasis, (*e*) up to the present it has not cured cases of blastomycosis, (*f*) in mixed cases of leishmaniasis and blastomycosis—which are rather frequent—the therapeutic effect is observed on the leishmania affection only, and, after an apparent improvement, the disease continues its slowly invading progress as a result of the blastomycosis, which alone remains

SELF-INFLICTED INJURIES AMONG SOLDIERS

Professor Attilio Ascarelli, of the Headquarters Military Hospital, at Rome, has published[1] some interesting observations based on his personal examination of several hundred cases during the last two years among soldiers suspected of suffering from medical or surgical ailments voluntarily inflicted or simulated The study of the exceptional causes which lead soldiers into this special kind of crime shows them to be many and various At the front there are met with especially forms of minor injuries sufficient to cause withdrawal from the fighting line to a base hospital, and each form of injury may assume an epidemic, almost contagious, aspect, so that one special lesion becomes predominant in a certain section of the troops, at first by the occurrence of a few cases which are often passed unrecognised, then by the rapid multiplication of similar cases and their abrupt cessation when the similarity and abundance of examples render the fraud manifest Cases in the interior, on the other hand, are endemic rather than epidemic, are more numerous in one place or another, assuming sometimes one form, sometimes another The contributing factors in these cases are complex. For example, instances are of more frequent occurrence in cities than in rural districts The predominant political feeling also determines their occurrence in certain localities, while social condition seems, on the other hand, to exert but little influence Family conditions are of some importance, sometimes it is the father of a large family, sometimes a soldier who has had a brother killed in action, sometimes penurious family surroundings, induce the resort to fraud in order to avoid military service, while at other times it may be the result of nostalgia. These injuries are relatively more frequent in young adults than in those habituated to camp life, are more numerous during the days following a new levy, and are most numerous in the recruit who is overpowered by fear of the unknown, while later on he gradually adapts himself to his new life A feeling of impunity is of particular importance, the military culprit pays little heed to the condemnation awaiting him after the war, and sometimes does not hide the fact that he has been able by these means to obtain exemption for some months, so much so that relapses occur in the same hospitals where such cases are treated and some who have even been punished by the authorities return later on with the same or some other form of self inflicted injury In about one third of the cases the existence of former wounds or diseases supplies the impulse which determines the injury, a small wound completely healed constitutes an admirable substratum for the application of some caustic, a contusion or sprain suggests the production of more permanent swelling by means of tight bandaging, a conjunctivitis or otitis contracted in childhood affords an explanation and excuse for the same conditions wilfully induced A further cause is to be found in the leave granted during winter or after convalescence, the soldier who returns for a longer or shorter time to his family surroundings is tempted at the expiration of his leave, and *often under the advice* of evil companions, to resort to questionable practices The most frequent injuries met with by Professor Ascarelli were —

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[1] THE LANCET, 1917, i, 653.

[1] Il Policlinico May 23rd and June 3rd, 1917 Practical Section.

(1) Inflammation and abscess due to the injection of chemical substances such as petrol benzine, turpentine, and chloride of lime generally into the calf, knee, or heel Sometimes on puncturing such abscesses an odour corresponding *to that of the substance injected* was observed (2) Abscess from injection of fæcal matter, the nature of which may sometimes be detected by the fæcal odour of the pus and the presence of a raised spot at the site of puncture (3) Chemical cauterisation, usually by soda or potash lye sulphuric or hydrochloric acid, aqua regia or chloride of zinc, the diagnosis is not difficult, but a general examination is necessary to exclude any condition that might explain the occurrence of the ulcer such as syphilis, diabetes, syringomyelia, varix, &c (4) Burns, caused by boiling water or lye, the shape and size of which often do not tally with the cause given in explanation (5) Hard œdema, a kind of cellulo dermatitis produced by self inflicted *blows frequently repeated, generally on the back* of the hand or foot, the anterior part of the thigh, or knee The region appears swollen, elevated, more or less regular in outline, and cyanotic X ray examination is always negative (6) Œdema from stasis produced by tight bandaging (7) Otitis caused by the introduction of irritants, generally grafted on a real chronic otitis The presence of lesions in the meatus and concha may reveal its artificial nature, which may result in stenosis or even facial paralysis (8) Conjunctivitis caused *by castor-oil seeds and other irritants* (9) Dermatitis from plants—i e, the roots of ranunculaceæ and euphorbia (10) Voluntary mutilation by firearms, seen almost exclusively in the war zone, in which blackening round the wound of entrance forms a guide as to the true cause

Professor Ascarelli believes that only a small minority of the soldiers who come under medical observation for self inflicted injuries exhibit definite criminaloid tendencies, but draws special attention to the marked hypoalgesia associated with such cases, which can be demonstrated by the absence of *painful impressions*, dilatation of the pupils or acceleration of pulse, when the patient is subjected to the application of strong faradism

THE UNITED STATES PHARMACOPŒIA

THE conditions under which the national pharmacopœias are revised in the United States of America and in this country differ fundamentally, but the question whether the American system is preferable to our own is hardly one that can be discussed *profitably at the present time* Another question which need only be stated just now is whether in Great Britain sufficient is done through private channels to explain lucidly to prescribers the changes that are introduced in succeeding editions of the Pharmacopœia or whether private enterprise could with advantage be supplemented, as in the United States, by official efforts The excellent publications issued in this country in the wake of a new Pharmacopœia—as, for instance, Martindale and Westcott's Extra Pharmacopœia, Squire's Companion, and the British *Pharmaceutical* Codex—would seem to provide all that could possibly be needed in the way of guides to medicines, and it is at least doubtful whether any Government department could furnish anything better In the United States, however, the Public Health Department does what in this country is done unofficially, *but the official* publication of the United States is neither so prompt, nor in our view so serviceable, as are those British publications to which reference has just been made The volume (Hygienic Laboratories, Bulletin No 107) before us consists of a digest of the changes and requirements included in the Pharmacopœia of the United States (ninth decennial revision) and in the National Formulary (fourth edition) Like the majority of official books, it looks official and lacks an *inviting appearance*, both generally and in detail That it serves its useful purpose, however, we do not doubt As the preface observes, "The publication of new editions of the established books and standards of medicines is of necessity accompanied by an element of uncertainty because of the many changes in the number and kind of *drugs and* preparations described therein, and also because of possible alterations in strength and nomenclature of widely used preparations." Hence the need on the part of the busy official, doctor, chemist, or pharmacist for something to show at a glance the present status of any official or recently official drug or compound included in the present editions of the United States Pharmacopœia and National Formulary and the immediately preceding editions The volume, in fact, is designed to serve as an index to the several recent editions of the United States official standards, and this it does effectively

THE BACTERIAL CONTENT OF A BATTLESHIP'S AIR

IN the *Archives de Médecine et de Pharmacie Navales* for April and May, 1917, Dr Candiotti, médecin de première classe (staff surgeon) of the French Navy, gives an account of his investigations, before the war, of the bacterial content of the air of a French ironclad He drew a large *volume* of air, 100 or 200 litres, through a tube of sugared water, and, plating that out, counted the colonies which developed He does not mention the culture medium nor the temperature of incubation, but he gives the number and character of aerobes and moulds found in a cubic metre of air from different parts of the ship His *experiments* were mostly made towards evening or at night, when the air was still, sometimes with the artificial ventilation stopped His numbers from the engine room and stokehold are low, those from the mess decks are higher In one of the latter he took two samples, the first about noon, which gave 1200 aerobes, 800 moulds, the second from 8 P M to midnight, when the temperature was the same, but the ventilation was obviously poor It was still weather, many hammocks were around, and a disagreeable smell prevailed This experiment gave 3600 aerobes and only 800 moulds, the same figure as by day, while the aerobe figure was trebled. In the wireless room Dr Candiotti found 3800 aerobes, 900 moulds, in the galley on the main deck 8100 aerobes, but in the vegetable store, two decks lower, 6900 aerobes and 12,800 moulds In these two latter sections only did he find colonies of the *Bacillus coli*, and he suggests that this may have accounted for the diarrhœa which he noted, *his observations being* made in summer The aerobes found were mostly staphylococci, and Dr Candiotti associates with this fact the prevalence among the men of boils and small abscesses, and the tendency of abrasions to inflame He endeavoured by guinea pig inoculation to prove the presence of the tubercle bacillus, but was unsuccessful Other observers have found smaller numbers of bacilli in the air of a *United States* battleship, but exact comparison is impossible in the absence of information regarding the culture media used and other details of method The results would gain in interest if the carbonic acid content of the air at the time of examination had been given as a guide to the efficiency of ventilation and a statement made of the number of men in the compartment and the cubic space per head

THE CASE MORTALITY OF INFECTIOUS DISEASES

THE report of the Metropolitan Asylums Board for the year 1916—the nineteenth year of issue—contains, among other statistical matter, an instructive summary of the average death rates from the common infections in the Board's hospitals during successive quinquennial periods Beginning with 1872–6, the mortality per 100 cases of scarlet fever sank period by period from 12 4 to 2 5 in 1907–11, the individual figures for the last five years being 1 6, 1 3, 1 4, 2 0, and 1 8 The similar even fall for diphtheria was from 33 6 in 1887–91 to 8 8 in 1907–11, with 6 2, 6 2, 7 9 7 9, 6 8 as the individual figures for the last five years Enteric fever started in 1872–6 with a case mortality of 18 6 which fell to 14 6 in 1907–11, and is only 13 1 in 1916 In the experience, therefore, of the Metropolitan Asylums Board scarlet fever is only one eighth as fatal as it used to be, diphtheria one fifth, and typhoid two thirds In striking contrast with these figures is the high level and relative constancy of the death rate from measles and whooping cough, 8 9 and 9 9 respectively for 1916, although it should be remembered that these have only been under observation for about ten years Scarlet fever may be said to be well under control, diphtheria is becoming so with earlier diagnosis and antitoxic treatment, but the problems of measles and whooping cough await solution

THE FACT OF DEATH

WE should have been surprised if the annotation in our issue of August 18th on death certification had not resulted in a communication from the Association for the Prevention of Premature Burial With the medical man's omission to see the corpse Mr J Brindley James associates a bevy of grisly possibilities murders may go unnoticed, insurance societies be defrauded, and unfortunate persons be buried while still alive Without necessarily sharing these gloomy forebodings we agree—and stated so in the annotation—to the desirability of a medical man seeing any person with respect to whom death has been alleged before signing a certificate The occurrence of death will not, except in the rarest instances, require verification by a medical man no attendant whether nurse or relative, at the bed side of a sick person has any doubt about the mysterious happening when the life of the person ceases to be No hospital sister sends for the resident medical officer to confirm the fact The fact of death is as clear and indisputable as the fact of life More difficulty may of course, arise where no witness was present at the time when death was assumed Our Paris Correspondent writes of tests applicable on the field of battle and of a new and safe conjunctival reaction The tests for the verification of death given by the Association may easily be further elaborated and might then become so delicate as to detect local life or the persistence of signs of life in the various tissues after general death has occurred Mr Shiro Tashiro who is instructor in physiological chemistry in the University of Chicago, has touched upon this subject in dealing with the chemical signs of life in a recent monograph published by the University of Chicago Press Mr Tashiro states that of all the signs of living processes one of the most universal is irritability, the inherent power of the living to react against a stimulation A necessary condition for this irritability of the tissues is metabolic activity, but this in itself is not evidence of vitality Metabolic response to an injury is the crucial test If a tissue is alive mechanical crushing will produce a metabolic response, if it is not alive there is no response If of two seeds or two similar pieces of animal tissue the crushed portion gives off more carbon dioxide than the other the seed or tissue is alive By means of his biometer Mr Tashiro claims to be able to make this distinction within a few minutes, or at all events within an hour or two His method is one of extreme delicacy and would have been useful in exploding the myth of millennium old living corn in mummy cases

THE DIETETICS OF SOUND WINE

SINCE the recent death of Professor Landouzy there has appeared in the *Journal de Médecine de Bordeaux* a letter from him addressed privately to a colleague who had written in the first year of the war asking advice on the attitude that should be taken by medical men to the public discussion concerning the use of wine by the troops The Academy of Medicine was then about to issue a resolution to the effect that the fighting men should receive daily a ration of wine, but high authorities and public opinion alike were disturbed by fears of alcoholism which were set forth in a number of speeches and letters, and in diligently compiled statistics Landouzy in his letter stated that he had been suspect on account of his consistent refusal to march under the banner of the abstainers "Abstention is everywhere, particularly under the sky of France,' he wrote, ' a scientific, economic, and historical heresy ' He deprecated the confusion between the ' alcoholism " of the northern countries of Europe and the metabolic effect of a quantum of French wine supplied pure and unadulterated, adding his opinion that 'natural wine ought to be given its place in the alimentary hygienic and economic ration, the ration of wine must be measured out in doses in the same way that albumin, carbohydrates, sugar, and fats are measured " To Landouzy the best way of teaching the nation to beware of alcoholism was to instruct the children in rational alimentation He thought that every Frenchman could with advantage drink daily with his meals a litre of natural wine, which at the price of 30 or 40 centimes would supply him with 500 calories daily at a price seven times less than that of the same number of calories from the butcher This would be of benefit to the Frenchman individually and to the country at large commercially, although he deprecated too close a connexion between commercialism and wine production Through industrialism the pure wine merchant was too often replaced by the "liquoriste' and the vendor of " vin maquillé " The correspondence thus started continued for some time, with the result that the Academy of Medicine passed unanimously their resolution approving of the introduction into the regulation ration of the soldier of the same quantity of natural wine as sanctioned in the Navy, with the precaution that where the authorities provided wine for the soldier he should not be able to obtain it elsewhere suggests the production of more permanent swelling by means of tight bandaging, a conjunctivitis or otitis contracted in childhood affords an explanation and excuse for the same conditions wilfully induced A further cause is to be found in the leave granted during winter or after convalescence, the soldier who returns for a longer or shorter time to his family surroundings is tempted at the expiration of his leave, and often under the advice of evil companions, to resort to questionable practices The most frequent injuries met with by Professor Ascarelli were —

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We should have been surprised if the annotation in our issue of August 18th on death certification had not resulted in a communication from the Association for the Prevention of Premature Burial With the medical man's omission to see the corpse Mr J Brindley James associates a bevy of grisly possibilities murders may go unnoticed, insurance societies be defrauded, and unfortunate persons be buried while *still alive* Without necessarily sharing these gloomy forebodings we agree—and stated *so in the* annotation—to the desirability of a medical man seeing any person with respect to whom death has been alleged before signing a certificate The occurrence of death will not, except in the rarest instances, require verification by a medical man no attendant, whether nurse or relative at the bed side of a sick person has any doubt about the mysterious happening when the life of the person ceases to be No hospital sister sends for the resident medical officer to confirm the fact The fact of death is as clear and indisputable as the fact of life More difficulty may of course, arise where no witness was present at the time when death was assumed Our Paris Correspondent writes of tests applicable on the field of battle and of a new and safe conjunctival reaction The tests for the verification of death given by the Association may easily be further elaborated and might then become so delicate as to detect local life or the persistence of signs of life in the various tissues after general death has occurred Mr Shiro Tashiro who is instructor in physiological chemistry in the University of Chicago, has touched upon this subject in dealing with the chemical signs of life in a recent monograph published by the University of Chicago Press Mr Tashiro states that of all the signs of living processes one of the most universal is irritability, the inherent power of the living to react against a stimulation A necessary condition for this irritability of the tissues is metabolic activity, but this in itself is not evidence of vitality Metabolic response to an injury is the crucial test If a tissue is alive mechanical crushing will produce a metabolic response, if it is not alive there is no response If of two seeds or two similar pieces of animal tissue the crushed portion gives off more carbon dioxide than the other the seed or tissue is alive By means of his biometer Mr Tashiro claims to be able to make this distinction within a few minutes, or at all events within an hour or two His method is one of extreme delicacy and would have been useful in exploding the myth of millennium old living corn in mummy cases

THE DIETETICS OF SOUND WINE

Since the recent death of Professor Landouzy there has appeared in the *Journal de Médecine de Bordeaux* a letter from him addressed privately to a colleague who had written in the first year of the war asking advice on the attitude that should be taken by medical men to the public discussion concerning the use of wine by the troops The Academy of Medicine was then about to issue a resolution to the effect that the fighting men should receive daily a ration of wine, but high authorities and public opinion alike were disturbed by fears of alcoholism which were set forth in a number of speeches and letters, and in diligently compiled statistics Landouzy in his letter stated that he had been suspect on account of his consistent refusal to march under the banner of the abstainers 'Abstention is everywhere, particularly under the sky of France," he wrote, a scientific, economic, and historical heresy" He deprecated the confusion between the 'alcoholism" of the northern countries of Europe and the metabolic effect of a quantum of French wine supplied pure and unadulterated, adding his opinion that "natural wine ought to be given its place in the alimentary hygienic and economic ration, the ration of wine must be measured out in doses in the same way that albumin, carbohydrates, sugar, and fats are measured" To Landouzy the best way of teaching the nation to beware of alcoholism was to instruct the children in rational alimentation He thought that every Frenchman could with advantage drink daily with his meals a litre of natural wine, which at the price of 30 or 40 centimes would supply him with 500 calories daily at a price seven times less than that of the same number of calories from the butcher This would be of benefit to the Frenchman individually and to the country at large commercially, although he deprecated too close a connexion between commercialism and wine production Through industrialism the pure wine merchant was too often replaced by the "liquoriste" and the vendor of "vin maquillé." The correspondence thus started continued for some time, with the result that the Academy of Medicine passed unanimously their resolution approving of the introduction into the regulation ration of the soldier of the same quantity of natural wine as sanctioned in the Navy, with the precaution that where the authorities provided wine for the soldier he should not be able to obtain it elsewhere

PARIS

(FROM OUR OWN CORRESPONDENT)

Malaria in the Near East and its Treatment

THE large number of men invalided with malaria from the Salonika Army has necessitated the provision of special hospitals to group the cases and give them systematic treatment and care Most of these hospitals are situated for convenience in the Marseilles district, but others are scattered up and down the country, and in the special hospital at Rueil, near Paris, accommodation is provided for convalescent soldiers who relapse and cannot be sent back to their depôt without previous treatment The abundant clinical material has given occasion for new studies on malaria, the special forms met with at Salonika, the results of various methods of treatment One of the most complete of these studies was presented to the Academy by Principal Marchoux, who was attached before the war to the Pasteur Institute and is now in charge of the medical service of the Place de Paris As a result of numbers of blood examinations made at the Pasteur Institute he concludes that in the malaria of the Near East the three recognised forms of Laveran's hæmatozoon, may be found, *Plasmodium vivax* being often associated with *P falciparum* M Marchoux s conclusions definitely point to quinine treatment, with regard to which he makes important observations likely to modify current principles of treatment A dose of 1 gm of quinine by the mouth causes a rapid disappearance of the schizonts, and may even arrest an attack when these are nearing maturity and beginning to fragment When the schizonts are immature it is better to spread the dose over the 24 hours in four portions of 0 25 gm in order to avoid auditory disturbance Fragmentation then takes place in from 24 to 48 hours without producing an attack. The action on the gametes of *P vivax* or of *P malariæ* is definite but incomplete, and some of them continue to live The crescents appear insensitive to quinine, dividing after an average period of 14 days by parthenogenesis and serving as the starting point for a new series of schizonts and gametes Hence apparent recovery may be followed by a fresh attack in 14 days, or even as much as a month later if the parthenogenetic generation has been scanty On the other hand, if the patient is the host of several generations of parasites the attacks may be weekly or even more frequent Rational treatment aims at destroying the successive crops of schizonts until exhaustion of the gametes results The microscope reveals parasites 2–3 days before the occurrence of fever, and by destroying them as soon as they appear complete sterilisation is rendered possible For this several grammes of quinine judiciously employed should suffice M Marchoux concludes by advising the grouping of malarial cases under the same roof, protected from anopheles, where daily examination of the blood can be carried out Men found to be free from parasites are sent to work in the fields, while others receive quinine and remain at rest Meantime convalescent malarial cases in Paris are being invited to have their blood examined twice a week at the Pasteur Institute as a guide to treatment at the correct moment The usual method of giving a daily dose of quinine doubtless secures against attack, but is liable to upset the digestion and is withal very costly In practice it is sufficient to administer 3 gm of quinine a week to deal with all generations of parasites in course of evolution, two or three days being necessary for each to develop to the point at which an attack is produced The diurnal dose of 1 gm is the necessary minimum assuming proper absorption and retention in the organism for a sufficient period For this reason except in acute attacks M Marchoux rejects subcutaneous and intravenous injections, for by these routes elimination is too rapid Oral medication is preferable, employing quinine salts which dissolve slowly—e g , the sulphate and especially the basic salt, which contains 85 per cent of alkaloid

Dr Ravaut and his colleagues at Marseilles have confirmed the observation that except in acute attacks quinine is as efficacious by the mouth as injected into a vein or beneath the skin These observers combine quinine with arsenical treatment, the latter being administered in the form of arrhenal, a dose of 0 2–0 3 gm being injected on two successive days alternating with two days of treatment with 2 gm of sulphate of quinine Treatment lasts 30–45 days, repeated if necessary As a preventive measure minimal daily doses of quinine are continued M Ravaut insists on the necessity of ensuring that the drug has actually been taken Struck with the complete failure of the treatment in certain cases, he made inquiries only to find that a great number of patients were avoiding treatment by a thousand ruses, either fearing the auditory or gastric effects or in order to prolong their stay in hospital He recommends a systematic urine control by means of Tanret's iodine reagent to ascertain that absorption has actually taken place, and prescribes, in the place of pills and cachets, which can readily be retained in the mouth to be spat out later, an aqueous solution of 33 gm to the litre of which 30 gm., or two tablespoonfuls, represent 1 gm of alkaloid, the dose being mixed with wine MM Jeanselme and Dalimier have done good service in determining by exact analysis the elimination of quinine in the urine following on the various routes of administration The intravenous method results in the most rapid appearance of alkaloid in the urine and the shortest stay in the system—viz , 27 hours Intramuscular injection in an oily excipient gives the longest retention—viz , 60 hours Taken by the mouth the urinary reaction does not appear for 25 minutes, but the duration of retention is only little longer than with intravenous administration—viz , 30 hours The latter is therefore only indicated in acute cases , for all others the oral method is preferable on account of its ease and safety

An Intermediate Surgical Hospital at the Front

New sanitary dispositions have been adopted in the army of General Anthoine which is participating in the Flanders attack In order that the wounded may be more rapidly picked up and evacuated, three clearing centres have been installed near the fighting line Competent surgeons attend to control the provisional dressings and supply each patient with a ticket, according to the nature and gravity of his wound, arranging for evacuation to special surgical centres. This arrangement has worked very well in practice Further between these clearing centres and the fighting line a new installation has been provided for the transportable wounded in the form of an intermediate surgical hospital, a sort of immense central aid post with a very thorough organisation and equipment, where all the wounded requiring operation can be attended to before being sent down to the clearing centres and the evacuation hospitals. By this means the dangers of primary infection and of gas gangrene, especially to be feared in an area which is practically a lake of mud, have been reduced to a minimum

A New Ocular Sign of Death

Dr Terson has added a new test to those already known with a view to establishing the certainty of death on the battlefield All existing tests are insufficient and open to criticism, and this applies to the best of these—viz., the injection of fluorescein as devised by Icard. In certain cases the patient who is still living does not show the green colouration of the conjunctiva with the necessary distinctness. M Terson recommends the placing on the conjunctiva of a minute quantity of dionin (ethyl morphine) powder If death has already occurred it is without effect, but if the patient is still living, although *in extremis*, an immediate and intense local reaction is produced with a purplish red colouration of the ocular conjunctiva and localised chemosis, which disappears rapidly without leaving a trace or causing inconvenience

August 27th

IRELAND

(FROM OUR OWN CORRESPONDENTS)

A Dublin General Hospital in France

THE second contingent of medical men for the Dublin General Hospital has arrived in France, and taken the place of the first contingent which has been serving there for the last three months The hospital thus staffed by relays of senior men, who could hardly be spared from their hospitals and classes for a longer period than three months, is a well equipped unit of 500 beds, and the staff have up to the present been kept busily engaged. Lieutenant Colonel T E Gordon, professor of surgery at Trinity College, Dublin, has taken over the command from Lieutenant-Colonel E H. Taylor The following physicians and surgeons have accompanied him on the staff Dr Alex Blayney, surgeon, Mater Hospital, Dr Denis Kennedy, surgeon, Vincent s Hospital, Dr Maurice Hayes, X rayist, Mater Hospital, Dr R J Rowlette, physician, Jervis Street Hospital, and pathologist, Steevens' and Rotunda Hospitals, Dr G Pugin Meldon, physician, Baggot Street Hospital, Dr T M Corbet

Chair of Medicine in the Royal College of Surgeons

At a special meeting of the Council of the Royal College of Surgeons in Ireland Lieutenant-Colonel William Taylor, President, in the chair, Major Francis Carmichael Purser, M D Dub, F R.C P Irel., was unanimously elected professor of the theory and practice of physic in the Schools of Surgery Major Purser, who is visiting physician to Mercer s Hospital received his commission soon after the outbreak of war, and has been working under the Royal Army Medical Corps as consulting neurologist to the Forces in Ireland He has already occupied the position of examiner in pathology to the Schools of Surgery and that of examiner in medicine to the School of Physic, Trinity College, Dublin.

Irish Nursing Board

The Irish Nursing Board, established with the approval of the Royal College of Surgeons in Ireland to standardise the education of nurses, to frame a curriculum, to supervise examinations, and to keep a register of the names of nurses who qualify, has drawn up and circulated a scheme for the consideration of the governors of training schools. At present the education of nurses is different for each training school, and the by laws have been framed in order to enable the Irish Nursing Board to take the place in this country that the College of Nursing in London aims at taking in England After July 1st, 1920, only the names of those nurses who hold the certificates of the Board, granted after examination, will be entitled to appear on the register Before admission to the examination ,the nurse will have to produce evidence of attendance in the wards of a recognised hospital during a period of three years of 45 weeks each, and at a series of lectures delivered in a recognised hospital or by authorised persons The Board solicits the coöperation of every hospital and institution interested in the welfare of nurses

August 24th

NOTES FROM INDIA

(FROM OUR OWN CORRESPONDENTS)

Pilgrims and Disease

IN his annual report the Sanitary Commissioner with the Government of India calls attention to the part played by large fairs in the spread of disease special reference being made to the heavy mortality from cholera 90 508 deaths were attributed to cholera in the United Provinces in 1915 a mortality nearly three times as great as in the previous year, and the pilgrims returning from the fair at Hardwar are regarded as important agents in the spread of infection In the Punjab cholera was *more* prevalent than in any year since 1903 causing 13 196 deaths, the same fair being assigned a large part in the spread of the disease The Bombay Pilgrim Committee, appointed at the suggestion of the Government of India to inquire into the possibility of improving the sanitary arrangements at places in the Bombay Presidency where pilgrims congregate, reports that the chief diseases disseminated by pilgrims are tuberculosis, malaria small pox, plague and the cholera group The committee unanimously concludes that the effect of pilgrim centres on the health of the general public is very marked and that the sanitary administration of these centres should guard against the danger and be judged by the measure of success attained in averting its results

New Concessions to the Medical Services

Temporary commissions —The Secretary of State for India has recently sanctioned the following improved terms for medical practitioners possessing qualifications registrable in the United Kingdom who accept temporary commissions in the Indian Medical Service The candidates are to be permitted to engage either for general service in India or abroad or for service in India (including Burma) but not Aden In the first case the terms will be (1) While serving in India, the pay of a permanent lieutenant, Indian Medical Service—namely, Rs 420 per mensem, or if in officiating charge of a regiment Rs 450 per mensem, (2) on field service or out of India, £1 4s per diem with free quarters, if available, and rations or compensation in lieu, (3) wound pensions and gratuities and family pensions and gratuities, (4) outfit allowance of Rs 600 if all spent in India, (5) gratuity of £60 on completion of each term of 12 months or portion thereof, except when services are dispensed with The terms for the second category of officers will be (1) Pay Rs 350, with charger allowances as laid down in Army Regulations, India, (2) free rations or compensation when serving in the field, (3) wound pensions and gratuities and family pensions and gratuities, (4) outfit allowance of Rs 300

Passages to India —The Government of India have decided to grant free passage to and from India to the families of officers of the Royal Army Medical Corps, both special reserve and the holders of temporary commissions, and of officers of the Indian Medical Service engaged in England and now serving in India who renew their contracts

Infantile Mortality in Calcutta

The latest available figures show the infantile mortality in Calcutta to be about 280 per 1000 births The lady superintendent of the Dufferin Hospital has undertaken to endeavour to form an infants' clinic which, if it prove successful is likely to lead to similar undertakings on a large scale The whole question of excessive infant, and especially female, mortality in India is one which should engage the energies of the educated classes

The Amendment of the Bombay Medical Act

The Bombay Medical Union, of which Mr K. M Dubash is president and Mr R D Mody and Mr A K Contractor are joint honorary secretaries, have addressed a letter to the Secretary of Council of Bombay criticising a Bill further amending the Bombay Medical Act which is to be introduced at the next meeting of the Council by the Hon Mr V J Patel. The Bombay Medical Union object to any additions to the Act which will 'permit the association in any way of duly qualified men with quacks and their institutions as contemplated by the Hon Mr Patel's Bill" The Union state that subclauses propose to protect the class of men practising as vaids, hakims, &c, the majority of whom are illiterate and uneducated They have not studied the Ayurvedic, Unani, or other indigenous systems of medicine, such as they are, but are only practising medicine from what little knowledge they may happen to acquire as compounders, assistants to vaids and hakims, or as their menial servants Generally they study a book of recipes for different ailments and boldly prescribe for any and every disease without making any diagnosis They may be successful in some of the minor and common ailments which cure themselves or by the use of popular household remedies, but in serious cases or in those requiring knowledge and skill in diagnosis and treatment they do more harm than good Many of them prescribe European drugs and medicine without having any conception of their composition and under fictitious Indian names In short, the contention of the Union is that the old systems of medicine have been mostly forgotten and that the old names are now mere tools in the hands of the majority of vaids and hakims The Union strongly object to the inclusion of the subassistant surgeons and military assistant surgeons in the Bombay Medical Council on the ground that this Council is a judicial as well as a punitive body and that only men of good education and high professional status should be elected to a body discharging such responsible functions

A New Medical Faculty in Mysore

The special committee appointed by the Senate of the Mysore University to draft a scheme for a medical faculty reports ample facilities in Bangalore for creating such a faculty without much expense The only initial outlay will be the provision of a suitable medical college to accommodate 100 students The committee suggests a course extending to six years for the degree of M B and B S with an additional two years for M D candidates The annual expenses for the faculty are estimated at Rs 23 000 and the cost of the medical college building at Rs 2½ to Rs 3 lakhs

July 1 th

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt J B Rawlins, R A M C , was a student at St Mary's Hospital, London, and qualified in August, 1914 He joined up shortly afterwards and was attached to a Highland Field Ambulance

Major E F B Wilson, South African M C , qualified at Dublin in 1881, and after practising for a few years in Ireland proceeded to South Africa, where he settled at Harrismith

Lieut Col F D Blandy, R A M C , was a student at the Middlesex Hospital and qualified in 1900 Before joining up in the spring of 1915 he was in practice at Tynemouth, Northumberland and held several local appointments

Capt H D Eccles, R A.M C attached Royal Irish Rifles, was a student at Guy's Hospital, London, and qualified in 1893 Before joining up he was in practice at Kawakawa, New Zealand, where he was medical officer to the Bay of Islands Maternity and General Hospital

Died

Capt D Arthur, M C , I M S , qualified at Glasgow in 1905, and held the appointment of house physician at the Western Infirmary in that city He was afterwards assistant medical officer of health for Cheadle, and joined the Indian Medical Service in 1909 He died while a prisoner of war at Entelli, Turkey in Asia The award of the M C was recorded in THE LANCET of Oct 28th, 1916, p 770

Brigade Surgeon Lieut Col H A de Lautour, V D , received his medical education at King's College, London, and qualified in 1874 He was in practice at Wellington, New Zealand, before going on active service, and died at Invercargill

Capt H Y C Taylor, R A M C , qualified at Edinburgh in 1896, and before joining up was in practice at Bexhill-on Sea He had held appointments at the Throat Hospital, Golden-square, at the Central London Ophthalmic Hospital, and at the Children's Hospital, Great Ormond street, London , and also at the Huddersfield Infirmary

Capt A Traill, R A M C , qualified L M S S A in 1915, and joined up shortly afterwards

Wounded

Capt J C Metcalfe, M C R A M C
Capt H S Turner, M C , R A M C
Capt A J O'Brien, M C , West African Field Force
Major J P Kenny, Australian A M C
Capt J Kearney R A.M C
Lieut T C D Watt, R A M C
Capt D M Smith, R A M C
Capt C Dundee, R A M C , attached Royal Irish Rifles
Capt F Harris, M C , R A M C , attached R.F A.
Lieut J H Mayston, R A M C , attached Border Regiment
Capt R S Aspinall, R A.M C
Capt W B Loveless, R A M C , attached Royal Irish Rifles
Capt S S Meighan, R A.M C
Capt R W Kenny, M C , Canadian A M C
Capt R D MacKenzie, Canadian A M C

Missing

Capt A K Sinha, I M S
Capt E Newton, R A.M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Private W Worthington, Royal West Kent Regiment, killed in action, only son of Dr H Worthington, of Luton, Beds

Second Lieut G F H Moore, Border Regiment, accidentally killed, only surviving son of the late Col J H Moore, R A M C , of Wellington, Somerset

Second Lieut B W Penny, Royal Fusiliers, died of wounds, youngest son of Dr E J Penny, of Wolverton, Bucks

Capt J O W Shine Royal Dublin Fusiliers, killed in action, eldest and only surviving son of Col J M F Shine, A M S

Capt J A Cahill, M C , Royal Berkshire Regiment, killed in action, only son of Dr J Cahill, of Seville street, London, S W

Second Lieut J S Reid, South Wales Borderers, died of wounds, only son of Dr E Reid, of Swansea

Lieut T H Stockwell, Canadian Infantry, killed in action, youngest son of the late Dr F Stockwell, of Bruton, Somerset

Capt H O'Connor, M C , King's Shropshire Light Infantry died of wounds, eldest son of Mr C O'Connor, F R C S.I., of Kildare

Cadet R Darling, Royal Irish Rifles, killed in action, youngest son of Dr J S Darling, of Lurgan, Ireland

Capt C Dundee, R A M C , attached Royal Irish Rifles wounded, youngest son of Dr C Dundee, J P , of Ballycarry, co Antrim

Second Lieut C W S Magill, Royal Irish Fusiliers, wounded only son of the late Dr C Magill, of Lisburn, co Antrim.

THE HONOURS LIST

The names of the following members of the medical profession are included in the first list of the recipients of the Most Excellent Order of the British Empire —

Knight Commander of the British Empire

Edward Stewart, Hon Lieut Col , R A M C

Commander of the British Empire

Louisa Garrett Anderson
Florence Elizabeth, Lady Barrett
Jay Gould, Lieut Col , I M S
Thomas Wheeler Hart
Flora Murray
Mary Ann Dacomb Scharlieb
Mary Chalmers Watson

Officer of the British Empire

Wilfred Balgarnie, Temp Lieut , R A.M C
Duncan McFayden Millar
William Ernest Nelson

Member of the British Empire

Sidney John Oldacres Dickins
George Cooper Franklin, Lieut Col , R A M C (T.F)

The following awards to medical officers are announced —

Distinguished Service Order

Major Rupert Iggulden Furber, Australian A.M C

For conspicuous gallantry and devotion to duty He had charge of an advanced dressing station for five days during which it was under heavy shell fire most of the time He displayed the greatest ability and devotion to duty in organising the dressing and evacuation of a large number of the wounded, on several occasions helping to bring them in himself

Lieut Col John Smith Purdy, Australian A M C

For conspicuous gallantry and devotion to duty Although continually under shell fire for seven days, he exercised close personal supervision over the evacuation of the wounded and by his own example of courage and disregard of danger he animated all ranks with a similar attitude of mind. His work during preliminary preparations displayed the same untiring energy and devotion to duty

Bar to the Military Cross

Temp Capt Ernest Harrison Griffin, M C , R A.M C

For conspicuous gallantry and devotion to duty He showed the greatest gallantry in rescuing wounded men by night from No Man's Land " where they had lain since dawn He worked for four hours under heavy and continued shell fire directing the bearers encouraging and personally assisting the wounded thereby enabling a large number of men to get back into our lines Whilst thus employed he went through the enemy's wire to within 60 yards of his position His work has been excellent since he came out in 1914 (The award of the M C was recorded in THE LANCET of Sept. 2nd 1916 p 460)

Military Cross

Capt Jack Rowland Stanley Grose Beard, Australian A.M C

For conspicuous gallantry and devotion to duty on many occasions He carried out his duties in attending to the wounded under the most trying and difficult circumstances under heavy enfilading artillery fire afterwards refusing to leave his aid post although it was blown in and he was buried On the following day he went out into a hostile barrage and brought in two stretcher bearers who had been wounded At all times his fearless example had the most inspiring effect on his medical staff

Capt Wendell Inglis Clark, Australian A M C

For conspicuous gallantry and devotion to duty He remained on duty for nearly three days with only four hours rest, attending to over 300 cases of wounded and working mostly under extremely heavy fire On many previous occasions he has done excellent work whilst under fire displaying the greatest courage and devotion

Capt Laurence Bedford Elwell, Australian A M C

For conspicuous gallantry and devotion to duty He persona organised, with great ability and entire disregard of his own safe the evacuation of wounded along a route which was under dir enemy observation and subjected to heavy rifle and machine-gun fi On another occasion he twice visited an aid post under inte hostile barrage to assist the officer in charge displaying as on other occasions the utmost fearlessness and devotion to duty

Capt Raphael Leo Kenihan, Australian A.M C

For conspicuous gallantry and devotion to duty He established th most forward regimental aid post in his division where he attended t the wounded under heavy shell fire the whole time Although himsel slightly wounded and compelled to shift his post twice by hostil shell fire he continued to attend all his cases with the greatest car and devotion saving many lives by remaining in his forward positio and setting a magnificent example

Temp Lieut. George Errington Lloyd R.A.M C

For conspicuous gallantry and devotion to duty He went forward to a captured position on his own initiative and established an aid post under shell fire, amongst shell-holes where he rendered valuable assistance to the wounded and was always at hand when casualties occurred

Capt Keith Shelley Parker, Australian A.M C

For conspicuous gallantry and devotion to duty He went forward under heavy artillery and machine-gun fire, and established his aid post in a shell hole, where he worked under most adverse conditions for five days without rest, attending the wounded of many units. He was under shell fire the whole time and set a splendid example of devotion to duty

Temp Capt Charles James Lodge Patch, R A.M.C

For conspicuous gallantry and devotion to duty in attending to a wounded officer in the front line and removing him to a place of safety During the whole time he was under shell fire by which he was wounded in two places, but disregarded his own wounds until those of the officer had been dressed His devotion to duty and contempt of danger when under fire have been most marked on many occasions

Temp Lieut. Frank Gordon Pedley, R.A.M.C (Lieut, Canadian A.M C)

For conspicuous gallantry and devotion to duty in proceeding to a dug out, which had been hit by enemy shell fire, and saving the lives of many of the occupants He afterwards went through a very heavy barrage to attend to a badly wounded officer whom he eventually brought back to the dressing station. On both occasions he displayed the utmost gallantry and disregard of danger

Capt Harold Powell, Australian A.M C

For conspicuous gallantry and devotion to duty in continually working under heavy fire and the most adverse conditions with complete disregard for his personal safety As medical officer he is invaluable to his battalion, not only in regard to his assistance in keeping the men medically and physically fit but by his example of coolness, courage, and good humour when under fire.

Temp Capt. Laurence Cecil Sebastian Roche, R.A.M C

For conspicuous gallantry and devotion to duty when in charge of forward stretcher-bearers. He worked under an intense barrage fire with his bearers, collecting and successfully evacuating large numbers of wounded, through a continuous barrage of 16 hours. His gallant conduct and personal disregard of all danger greatly inspired his men in the execution of their duty

Temp Capt John Ross, R A M C

For conspicuous gallantry and devotion to duty in remaining in the open from 6 A.M. to 9 P.M., dressing and attending the wounded of his own and other regiments under heavy shell fire He then went to assist another unit whose medical officer had been wounded and during the whole of the operations he set a splendid example of cheerfulness and boundless energy

Temp Lieut John Edward Sandilands R.A.M C

For conspicuous gallantry and devotion to duty in leading his bearers forward under heavy barrage to evacuate wounded. He continued throughout the day to organise and superintend the removal of casualties under heavy shell fire.

Temp Capt John Ingram Shepherd, R.A.M C

For conspicuous gallantry and devotion to duty in working unceasingly day and night under heavy shell fire The fire was so intense that many of the men he dressed were subsequently killed His work was marked by the utmost courage and disregard of personal safety under extremely trying conditions.

Capt Fritz Peter Max Solling Australian A.M C

For conspicuous gallantry and devotion to duty Although under constant shell fire for a fortnight he continued to attend to the casualties of his own and of other units on one occasion for a period of 2 hours without a break During a heavy hostile gas attack he displayed the utmost devotion and disregard of danger

Temp Capt Bernard Charles Tennent, R.A.M.C

For conspicuous gallantry and devotion to duty in continually exposing himself with the utmost fearlessness under heavy shell fire in order to visit his posts in the front trenches. He dressed many men in the open regardless of personal danger and when his bearers became casualties he took their place and assisted to carry the wounded himself

Capt Cedric William Whiting Australian A.M C

For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers He displayed the greatest ability in keeping touch with the aid post and in clearing the wounded, twice taking his bearers through a heavy barrage for this purpose His pluck and determination were beyond all praise

Temp Capt Herbert George Willis, R A M C

For conspicuous gallantry and devotion to duty in leading his men to the front line trenches to assist regimental stretcher bearers He was conspicuous in dressing the wounded under heavy fire taking out a party and exposing himself with the utmost fearlessness thereby ensuring all the wounded being removed to the aid posts

Capt Roy Coupland Winn Australian A M C

For conspicuous gallantry and devotion to duty when in charge of stretcher bearers He constantly patrolled the bearer line under very heavy shell fire maintaining communication between aid-posts and dressing stations and on one occasion he took a squad across the open through an intense barrage to an aid post in order to relieve a temporary [illegible] of wounded. He was twice wounded the [illegible] time [illegible] and [illegible] [illegible] was the means of saving many lives

Capt John Smythe Yule, Australian A M C

For conspicuous gallantry and devotion to duty whilst under heavy shell fire. Although gassed early in the operation he remained continuously on duty for two days, during which time 450 cases passed through his hands He has shown great gallantry on numerous previous occasions.

The following awards to and promotions of medical officers are particular to the operations in Mesopotamia —

C M G—Lt -Col. and Bt -Col M. H. G Fell, R.A.M.C Lt -Col and Bt. Col. J M. Sloan, D S O R.A.M C Lt Col (temp Col) C N C Wimberley I M.S Lt -Col. R. V Hugo I M.S Lt.-Col. (temp Col) W H. Ogilvie, I.M S Temp Lt Col T P Legg R.A.M C

C I.E.—Maj D Munro I M S Lt -Col F O N Mell I.M.S Lt.-Col. B Nauth, I.M.S

To be Brevet Lieutenant-Colonel—Maj L J M Deas I.M.S Maj J D Graham, I.M.S Maj A. W M. Harvey I.M.S Maj H. M. H. Melhuish, I M S Maj D S Skelton, D S O R.A.M.C Maj T S B Williams I.M.S

To be Brevet Major—Capt. L. Dunbar R.A.M.C Capt. L. H L Mackenzie, I M.S Capt W McNaughton R.A.M C

Distinguished Service Order—Lt Col J H. R Bond R.A M C Maj and Bt. Lt. Col. G Browse, I M.S Capt. (actg Lt. Col) E T Burke R.A M.C., Spec. Res. Maj (temp. Lt. Col.) A B Fry I.M S Maj S R Godkin, I.M.S Capt. G R. Lynn I.M.S Capt J S McCombe, R.A.M C Capt W K. Morrison, R.A.M.C Lt Col (acting Col.) H M Morton R.A.M C Maj T G F Paterson, I.M.S Lt.-Col R. L. Perry I.M.S Capt D C Pim, R.A.M.C., Spec. Res Lt. Col. W A. Woodside R.A.M C

Bar to Military Cross—Capt C A. Wood M C., I M S

Military Cross—Capt. F J Anderson I M.S Capt L. D Bailey R.A.M.C Capt. C H N Baker I M.S Capt. W Bisset R A.M.C Temp Capt A. Budd R A.M C Capt H Chand, I M S Temp Capt A. J Ireland R.A.M.C Capt J Melvin R.A M C., Spec. Res Capt. S H Middleton West, I M S Capt C H Reinhold I.M S Capt. E P A. Smith R.A.M C Capt. N S Sodhi I M S Temp Capt D McD Wilson R.A.M C

THE CENTRAL MEDICAL WAR COMMITTEE

At a meeting of the Committee held on August 29th the following resolution was passed —

> This meeting of the Central Medical War Committee represents to the Government that in view of the composition of the Committee of Inquiry (the only intimation of which it has received through the public press) it is emphatically of opinion that unless at least the chairman of the Central Medical War Committee is added thereto the personnel of the new committee will not satisfy the opinion of the general body of medical practitioners in this country

The resolution has been communicated to the Secretary of State for War

THE IVORY CROSS AND "DEARER DENTISTRY"

It has been brought to the notice of the Council of the Ivory Cross that certain papers have announced in paragraphs obviously inspired by untrained dental practitioners, that the fees paid by this organisation have been raised Captain the Right Hon Lord Greville, as chairman, states in reply that the fees accepted by the qualified dentists are exactly the same as paid by the Soldiers and Sailors' Dental Aid Fund founded in 1914 of which the Ivory Cross is the outcome—this in spite of the increased cost of establishment charges and of all dental materials. An additional strain is thereby thrown upon the patriotism of a professional class hard hit in many directions by the war All officials are volunteers giving their services, and the generous help of many specialists is at the disposal of the Fund, its good work grows daily in volume and is only limited by the amount of moneys subscribed by a generous public Donations in aid of its national work of mercy may be sent to the honorary treasurer, Sir Herbert Bartlett Bart 10, Conduit-street W 1

TREATMENT OF DISABLED SOLDIERS IN SCOTLAND

Mr Duncan Millar asked the Minister of Pensions in the House of Commons recently to state the number of schemes which had been approved in Scotland for the treatment of disabled soldiers and the arrangements which had been completed by the local committee set up in Scotland to deal with this subject Mr Barnes replied that no general schemes for the institutional treatment of disabled soldiers have yet been submitted by local committees in Scotland on the lines set out in the recent instructions issued by the Ministry of Pensions but that the Statutory Committee have approved of the use of 240 institutions in Scotland and local committees are able to send cases direct to these institutions in accordance with the terms of approval The Joint Institutional Committee for Scotland, which has lately been constituted is now making arrangements for the purposes of a neurasthenic home near Edinburgh and for a number of orthopaedic annexes The treatment of discharged sailors and soldiers suffering from rheumatism is undertaken at Moffat and Strathpeffer and the provision of increased accommodation for paraplegics and for men suffering from epilepsy and tuberculosis is under consideration

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt J B Rawlins, R A M C, was a student at St Mary's Hospital, London, and qualified in August, 1914 He joined up shortly afterwards and was attached to a Highland Field Ambulance

Major E F B Wilson, South African M C, qualified at Dublin in 1881, and after practising for a few years in Ireland proceeded to South Africa, where he settled at Harrismith

Lieut Col F D Blandy, R A M C, was a student at the Middlesex Hospital and qualified in 1900 Before joining up in the spring of 1915 he was in practice at Tynemouth, Northumberland and held several local appointments

Capt H D Eccles, R A M C, attached Royal Irish Rifles, was a student at Guy's Hospital, London, and qualified in 1893 Before joining up he was in practice at Kawakawa, New Zealand, where he was medical officer to the Bay of Islands Maternity and General Hospital

Died

Capt D Arthur, M C, I M S, qualified at Glasgow in 1905, and held the appointment of house physician at the Western Infirmary in that city He was afterwards assistant medical officer of health for Cheadle and joined the Indian Medical Service in 1909 He died while a prisoner of war at Entelli, Turkey in Asia The award of the M C was recorded in THE LANCET of Oct 28th, 1916, p 770

Brigade Surgeon Lieut Col H A de Lantour, V D, received his medical education at King's College, London, and qualified in 1874 He was in practice at Wellington, New Zealand, before going on active service, and died at Invercargill

Capt H Y C Taylor, R A M C, qualified at Edinburgh in 1896, and before joining up was in practice at Bexhill-on Sea He had held appointments at the Throat Hospital, Golden square, at the Central London Ophthalmic Hospital, and at the Children's Hospital, Great Ormond street, London, and also at the Huddersfield Infirmary

Capt A. Traill, R A M C, qualified L M S S A in 1915, and joined up shortly afterwards

Wounded

Capt J C Metcalfe, M C R A M C
Capt H S Turner, M C, R A M C
Capt A. J O'Brien M C, West African Field Force
Major J P Kenny, Australian A M C
Capt J Kearney, R A M C
Lieut T C D Watt, R A M C
Capt D M Smith, R A M C
Capt C Dundee, R A.M C, attached Royal Irish Rifles
Capt F Harris, M C, R A.M C, attached R.F A
Lieut J H Mayston, R A.M C, attached Border Regiment
Capt R S Aspinall, R A M C
Capt W B Loveless, R A M C, attached Royal Irish Rifles
Capt S S Meighan, R A.M C
Capt R W Kenny, M C, Canadian A M C
Capt R D MacKenzie Canadian A M C

Missing

Capt A. K Sinha, I M S
Capt E Newton, R A.M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Private W Worthington, Royal West Kent Regiment, killed in action, only son of Dr H Worthington, of Luton, Beds

Second Lieut G F H Moore, Border Regiment, accidentally killed, only surviving son of the late Col J H Moore, R A M C, of Wellington, Somerset

Second Lieut B W Penny, Royal Fusiliers, died of wounds, youngest son of Dr E J Penny of Wolverton, Bucks

Capt J O W Shine, Royal Dublin Fusiliers, killed in action, eldest and only surviving son of Col J M F Shine, A M S

Capt J A Cahill, M C, Royal Berkshire Regiment, killed in action only son of Dr J Cahill, of Seville street, London, S W

Second Lieut J S Reid, South Wales Borderers, died of wounds, only son of Dr E Reid, of Swansea

Lieut T H Stockwell, Canadian Infantry, killed in action, youngest son of the late Dr F Stockwell, of Bruton Somerset

Capt H O'Connor, M C, King's Shropshire Light Infantry died of wounds, eldest son of Mr C O'Connor, F R C S I, of Kildare

Cadet R Darling, Royal Irish Rifles, killed in action, youngest son of Dr J S Darling, of Lurgan, Ireland.

Capt C Dundee, R A M C, attached Royal Irish Rifles wounded, youngest son of Dr C Dundee, J P, of Ballycarry, co Antrim

Second Lieut C W S Magill, Royal Irish Fusiliers, wounded only son of the late Dr C Magill, of Lisburn co Antrim.

THE HONOURS LIST

The names of the following members of the medical profession are included in the first list of the recipients of the *Most Excellent Order of the British Empire* —

Knight Commander of the British Empire

Edward Stewart, Hon Lieut Col, R A.M C

Commander of the British Empire

Louisa Garrett Anderson
Florence Elizabeth, Lady Barrett
Jay Gould, Lieut Col, I M S
Thomas Wheeler Hart
Flora Murray
Mary Ann Dacomb Scharlieb
Mary Chalmers Watson

Officer of the British Empire

Wilfred Balgarnie, Temp Lieut, R A.M C
Duncan McFayden Millar
William Ernest Nelson

Member of the British Empire

Sidney John Oldacres Dickins
George Cooper Franklin, Lieut -Col, R A M C (T F)

The following awards to medical officers are announced —

Distinguished Service Order

Major Rupert Iggulden Furber, Australian A.M C

For conspicuous gallantry and devotion to duty He had charge of an advanced dressing station for five days during which it was under heavy shell fire most of the time He displayed the greatest ability and devotion to duty in organising the dressing and evacuation of a large number of the wounded, on several occasions helping to bring them in himself

Lieut Col John Smith Purdy, Australian A M C

For conspicuous gallantry and devotion to duty Although continually under shell fire for seven days, he exercised close personal supervision over the evacuation of the wounded and by his own example of courage and disregard of danger he animated all ranks with a similar attitude of mind. His work during preliminary preparations displayed the same untiring energy and devotion to duty

Bar to the Military Cross

Temp Capt Ernest Harrison Griffin, M.C, R A.M C

For conspicuous gallantry and devotion to duty He showed the greatest gallantry in rescuing wounded men by night from 'No Man's Land, where they had lain since dawn He worked for four hours under heavy and continued shell fire directing the bearers encouraging and personally assisting the wounded thereby enabling a large number of men to get back into our lines Whilst thus employed he went through the enemy's wire to within 60 yards of his position His work has been excellent since he came out in 1914 (The award of the M C was recorded in THE LANCET of Sept 2nd 1916 p 450)

Military Cross

Capt Jack Rowland Stanley Grose Beard, Australian A.M C

For conspicuous gallantry and devotion to duty on many occasions He carried out his duties in attending to the wounded under the most trying and difficult circumstances under heavy enfilading artillery fire, afterwards refusing to leave his aid post although it was blown in and he was buried On the following day he went out into a hostile barrage and brought in two stretcher bearers who had been wounded At all times his fearless example had the most inspiring effect on his medical staff

Capt Wendell Inglis Clark, Australian A.M C

For conspicuous gallantry and devotion to duty He remained on duty for nearly three days with only four hours rest, attending to over 300 cases of wounded and working mostly under extremely heavy fire On many previous occasions he has done excellent work whilst under fire displaying the greatest courage and devotion.

Capt Laurence Bedford Elwell, Australian A M C

For conspicuous gallantry and devotion to duty He personally organised with great ability and entire disregard of his own safety the evacuation of wounded along a route which was under direct enemy observation and subjected to heavy rifle and machine-gun fire. On another occasion he twice visited an aid post under intense hostile barrage to assist the officer in charge displaying as on all other occasions the utmost fearlessness and devotion to duty

Capt Raphael Leo Kenihan, Australian A.M C

For conspicuous gallantry and devotion to duty He established the most forward regimental aid post in his division where he attended to the wounded under heavy shell fire the whole time Although himself slightly wounded and compelled to shift his post twice by hostile shell fire he continued to attend all his cases with the greatest care and devotion saving many lives by remaining in his forward position and setting a magnificent example

Temp Lieut. George Errington Lloyd, R.A.M.C

For conspicuous gallantry and devotion to duty He went forward to a captured position on his own initiative and established an aid post under shell-fire, amongst shell-holes, where he rendered valuable assistance to the wounded and was always at hand when casualties occurred

Capt Keith Shelley Parker, Australian A.M.C

For conspicuous gallantry and devotion to duty He went forward under heavy artillery and machine-gun fire and established his aid post in a shell-hole, where he worked under most adverse conditions for five days without rest, attending the wounded of many units He was under shell-fire the whole time, and set a splendid example of devotion to duty

Temp Capt. Charles James Lodge Patch, R.A.M.C

For conspicuous gallantry and devotion to duty in attending to a wounded officer in the front line and removing him to a place of safety During the whole time he was under shell-fire by which he was wounded in two places, but disregarded his own wounds until those of the officer had been dressed. His devotion to duty and contempt of danger when under fire have been most marked on many occasions

Temp Lieut Frank Gordon Pedley, R.A.M.C (Lieut., Canadian A.M.C.)

For conspicuous gallantry and devotion to duty in proceeding to a dug-out, which had been hit by enemy shell fire, and saving the lives of many of the occupants He afterwards went through a very heavy barrage to attend to a badly wounded officer whom he eventually brought back to the dressing station. On both occasions he displayed the utmost gallantry and disregard of danger

Capt. Harold Powell, Australian A.M.C

For conspicuous gallantry and devotion to duty in continually working under heavy fire and the most adverse conditions, with complete disregard for his personal safety As medical officer he is invaluable to his battalion, not only in regard to his assistance in keeping the men medically and physically fit, but by his example of coolness, courage, and good humour when under fire.

Temp Capt. Laurence Cecil Sebastian Roche, R.A.M.C

For conspicuous gallantry and devotion to duty when in charge of forward stretcher-bearers. He worked under an intense barrage fire with his bearers, collecting and successfully evacuating large numbers of wounded, through a continuous barrage of 16 hours. His gallant conduct and personal disregard of all danger greatly inspired his men in the execution of their duty

Temp Capt. John Ross, R.A.M.C

For conspicuous gallantry and devotion to duty in remaining in the open from 6 A.M. to 9 P.M., dressing and attending the wounded of his own and other regiments under heavy shell-fire. He then went to assist another unit whose medical officer had been wounded, and during the whole of the operations he set a splendid example of cheerfulness and boundless energy

Temp Lieut. John Edward Sandilands, R.A.M.C

For conspicuous gallantry and devotion to duty in leading his bearers forward under heavy barrage to evacuate wounded. He continued throughout the day to organise and superintend the removal of casualties under heavy shell-fire.

Temp Capt. John Ingram Shepherd, R.A.M.C

For conspicuous gallantry and devotion to duty in working unceasingly day and night under heavy shell-fire. The fire was so intense that many of the men he dressed were subsequently killed. His work was marked by the utmost courage and disregard of personal safety under extremely trying conditions.

Capt Fritz Peter Max Solling, Australian A.M.C

For conspicuous gallantry and devotion to duty Although under constant shell-fire for a fortnight he continued to attend to the casualties of his own and of other units, on one occasion for a period of 2[illegible] hours without a break. During a heavy hostile gas attack he displayed the utmost devotion and disregard of danger

Temp Capt Bernard Charles Tennent, R.A.M.C

For conspicuous gallantry and devotion to duty in continually exposing himself with the utmost fearlessness under heavy shell-fire in order to visit his posts in the front trenches. He dressed many men in the open, regardless of personal danger, and when his bearers became casualties he took their place and assisted to carry the wounded himself

Capt. Cedric William Whiting, Australian A.M.C

For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers He displayed the greatest ability in keeping touch with the aid post and in clearing the wounded, twice taking his bearers through a heavy barrage for this purpose. His pluck and determination were beyond all praise.

Temp Capt Herbert George Willis, R.A.M.C

For conspicuous gallantry and devotion to duty in leading his men into the front-line trenches to assist regimental stretcher-bearers He was continuous in dressing the wounded under heavy fire taking up a party and exposing himself with the utmost fearlessness, thereby ensuring all the wounded being removed to the aid posts

Capt Roy Coupland Winn, Australian A.M.C

For conspicuous gallantry and devotion to duty when in charge of stretcher-bearers He constantly patrolled the bearer line under very heavy shell-fire maintaining communication between aid posts and dressing station and on one occasion he took a squad across the open through an intense barrage to an aid-post in order to relieve a temporary glut of wounded. He was twice wounded, the second time severely, and his gallant conduct was the means of saving many lives

Capt John Smythe Yule, Australian A.M.C

For conspicuous gallantry and devotion to duty whilst under heavy shell fire. Although gassed early in the operation he remained continuously on duty for two days, during which time [illegible]0 cases passed through his hands He has shown great gallantry on numerous previous occasions

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The following awards to and promotions of medical officers are particular to the operations in Mesopotamia —

C.M.G.—Lt.-Col. and Bt.-Col. M. H. G. Fell, R.A.M.C Lt.-Col. and Bt. Col. J. M. Sloan, D.S.O. R.A.M.C Lt.-Col. (temp. Col.) C. N. C. Wimberley, I.M.S Lt.-Col. H. V. Hugo, I.M.S Lt.-Col. (temp Col.) W. H. Ogilvie, I.M.S Temp. Lt. Col. T. P. Legg, R.A.M.C.

C.I.E.—Maj D. Munro, I.M.S Lt.-Col. F. O. N. Mell, I.M.S Lt.-Col. B. Nauth, I.M.S

To be Brevet Lieutenant Colonel—Maj L. J. M. Deas, I.M.S Maj J. D. Graham, I.M.S Maj A. W. M. Harvey, I.M.S Maj H. M. H. Melhuish, I.M.S Maj D. S. Skelton, D.S.O. R.A.M.C Maj T. S. B. Williams, I.M.S

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Bar to Military Cross—Capt. C. A. Wood, M.C., I.M.S

Military Cross—Capt. F. J. Anderson, I.M.S Capt. L. D. Bailey, R.A.M.C Capt. C. H. N. Baker, I.M.S Capt. W. Bisset, R.A.M.C Temp. Capt. A. Budd, R.A.M.C Capt. H. Chand, I.M.S Temp Capt. A. J. Ireland, R.A.M.C Capt. J. Melvin, R.A.M.C., Spec. Res Capt. S. H. Middleton West, I.M.S Capt. C. H. Reinhold, I.M.S Capt. E. P. A. Smith, R.A.M.C Capt. N. S. Sodhi, I.M.S Temp Capt. D. McD. Wilson, R.A.M.C

THE CENTRAL MEDICAL WAR COMMITTEE.

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Capt A Traill R A M C, qualified L M S S A in 1915, and joined up shortly afterwards

Wounded

Capt J C Metcalfe, M C R A M C
Capt H S Turner, M C, R A M C
Capt A J O'Brien, M C, West African Field Force
Major J P Kenny, Australian A M C
Capt J Kearney, R A.M C
Lieut T C D Watt, R A M C
Capt D M Smith, R A M C
Capt C Dundee, R A.M C, attached Royal Irish Rifles
Capt F Harris, M C, R A M C, attached R.F A.
Lieut J H Mayston, R A.M C, attached Border Regiment
Capt R S Aspinall, R A.M C
Capt W B Loveless R A.M C, attached Royal Irish Rifles
Capt S S Meighan, R A M C
Capt R W Kenny, M C, Canadian A M C
Capt R D MacKenzie Canadian A.M C

Missing

Capt A K Sinha, I M S
Capt E Newton, R A M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Private W Worthington, Royal West Kent Regiment, killed in action, only son of Dr H Worthington, of Luton, Beds

Second Lieut G F H Moore, Border Regiment, accidentally killed, only surviving son of the late Col J H Moore, R A M C, of Wellington, Somerset

Second Lieut B W Penny, Royal Fusiliers, died of wounds, youngest son of Dr E J Penny, of Wolverton, Bucks

Capt J O W Shine Royal Dublin Fusiliers, killed in action, eldest and only surviving son of Col J M F Shine, A M S

Capt J A Cahill, M C, Royal Berkshire Regiment, killed in action, only son of Dr J Cahill, of Seville street, London, S W

Second Lieut J S Reid, South Wales Borderers, died of wounds, only son of Dr E Reid, of Swansea

Lieut T H. Stockwell, Canadian Infantry, killed in action, youngest son of the late Dr F Stockwell, of Bruton Somerset

Capt H O'Connor, M C, King's Shropshire Light Infantry died of wounds, eldest son of Mr C O'Connor, F R C S.I., of Kildare

Cadet R Darling, Royal Irish Rifles, killed in action, youngest son of Dr J S Darling, of Lurgan, Ireland

Capt C Dundee, R A.M C, attached Royal Irish Rifles wounded, youngest son of Dr C Dundee, J P, of Ballycarry, co Antrim

Second Lieut C W S Magill, Royal Irish Fusiliers, wounded only son of the late Dr C Magill, of Lisburn, co Antrim.

THE HONOURS LIST

The names of the following members of the medical profession are included in the first list of the recipients of the Most Excellent Order of the British Empire —

Knight Commander of the British Empire

Edward Stewart, Hon Lieut Col, R A M C

Commander of the British Empire

Louisa Garrett Anderson
Florence Elizabeth, Lady Barrett
Jay Gould, Lieut Col, I M S
Thomas Wheeler Hart
Flora Murray
Mary Ann Dacomb Scharlieb
Mary Chalmers Watson

Officer of the British Empire

Wilfred Balgarnie, Temp Lieut, R A.M C
Duncan McFayden Millar
William Ernest Nelson

Member of the British Empire

Sidney John Oldacres Dickins
George Cooper Franklin, Lieut Col, R A.M C (T.F)

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Temp Lieut. George Errington Lloyd, R A M C

For conspicuous gallantry and devotion to duty He went forward to a captured position on his own initiative, and established an aid post under shell fire amongst shell holes where he rendered valuable assistance to the wounded and was always at hand when casualties occurred

Capt Keith Shelley Parker, Australian A M C

For conspicuous gallantry and devotion to duty He went forward under heavy artillery and machine-gun fire, and established his aid post in a shell hole, where he worked under most adverse conditions for five days without rest, attending the wounded of many units He was under shell fire the whole time and set a splendid example of devotion to duty

Temp Capt Charles James Lodge Patch, R A M C

For conspicuous gallantry and devotion to duty in attending to a wounded officer in the front line and removing him to a place of safety During the whole time he was under shell fire by which he was wounded in two places, but disregarded his own wounds until those of the officer had been dressed His devotion to duty and contempt of danger when under fire have been most marked on many occasions

Temp Lieut Frank Gordon Pedley, R A.M C (Lieut, Canadian A M C)

For conspicuous gallantry and devotion to duty in proceeding to a dug out, which had been hit by enemy shell fire, and saving the lives of many of the occupants He afterwards went through a very heavy barrage to attend to a badly wounded officer whom he eventually brought back to the dressing station On both occasions he displayed the utmost gallantry and disregard of danger

Capt Harold Powell, Australian A M C

For conspicuous gallantry and devotion to duty in continually working under heavy fire and the most adverse conditions with complete disregard for his personal safety As medical officer he is invaluable to his battalion, not only in regard to his assistance in keeping the men medically and physically fit, but by his example of coolness courage and good humour when under fire

Temp Capt Laurence Cecil Sebastian Roche, R A.M C

For conspicuous gallantry and devotion to duty when in charge of forward stretcher-bearers He worked under an intense barrage fire with his bearers collecting and successfully evacuating large numbers of wounded through a continuous barrage of 16 hours His gallant conduct and personal disregard of all danger greatly inspired his men in the execution of their duty

Temp Capt John Ross, R A.M C

For conspicuous gallantry and devotion to duty in remaining in the open from 6 A.M to 9 P M dressing and attending the wounded of his own and other regiments under heavy shell fire He then went to assist another unit whose medical officer had been wounded, and during the whole of the operations he set a splendid example of cheerfulness and boundless energy

Temp Lieut John Edward Sandilands, R.A.M C

For conspicuous gallantry and devotion to duty in leading his bearers forward under heavy barrage to evacuate wounded He continued throughout the day to organise and superintend the removal of casualties under heavy shell fire

Temp Capt John Ingram Shepherd, R A.M C

For conspicuous gallantry and devotion to duty in working unceasingly day and night under heavy shell fire The fire was so intense that many of the men he dressed were subsequently killed His work was marked by the utmost courage and disregard of personal safety under extremely trying conditions

Capt Fritz Peter Max Solling, Australian A M C

For conspicuous gallantry and devotion to duty Although under constant shell fire for a fortnight he continued to attend to the casualties of his own and of other units, on one occasion for a period of 24 hours without a break During a heavy hostile gas attack he displayed the utmost devotion and disregard of danger

Temp Capt Bernard Charles Tennent, R A.M C

For conspicuous gallantry and devotion to duty in continually exposing himself with the utmost fearlessness under heavy shell fire in order to visit his posts in the front trenches He dressed many men in the open regardless of personal danger and when his bearers became casualties he took their place and assisted to carry the wounded himself

Capt Cedric William Whiting, Australian A M C

For conspicuous gallantry and devotion to duty when in charge of stretcher bearers He displayed the greatest ability in keeping touch with the aid post and in clearing the wounded twice taking his bearers through a heavy barrage for that purpose His pluck and determination were beyond all praise

Temp Capt Herbert George Willis, R A M C

For conspicuous gallantry and devotion to duty in leading his men into the front-line trenches to assist regimental stretcher bearers He was conspicuous in dressing the wounded under heavy fire taking out a party and exposing himself with the utmost fearlessness thereby ensuring all the wounded being removed to the aid posts

Capt Roy Coupland Winn Australian A M C

For conspicuous gallantry and devotion to duty when in charge of stretcher bearers. He constantly patrolled the bearer line under very heavy shell fire maintaining communication between aid posts and dressing stations and on one occasion he took a squad across the open through an intense barrage to an aid post in order to relieve a temporary glut of wounded He was twice wounded the second time severely and his gallant conduct was the means of saving many lives

Capt John Smythe Yule, Australian A M C

For conspicuous gallantry and devotion to duty whilst under heavy shell fire Although gassed early in the operation he remained continuously on duty for two days during which time 450 cases passed through his hands He has shown great gallantry on numerous previous occasions

The following awards to and promotions of medical officers are particular to the operations in Mesopotamia —

C M G—Lt Col and Bt-Col M. H. G Fell, R A.M C Lt. Col and Bt Col J M Sloan D S O R.A M C Lt.-Col (temp Col) C N C Wimberley I M S Lt-Col E V Hugo I M S Lt Col (temp Col.) W H Ogilvie, I M S Temp Lt Col T P Legg R.A.M C

C I E—Maj D Munro I M S Lt-Col F O N Mell I M.S Lt. Col. B Nauth I M S

To be Brevet Lieutenant Colonel—Maj L J M Deas I M S Maj J D Graham I M S Maj A. W M. Harvey I M S Maj H M H Melhuish, I M S Maj D S Skelton D S O R A.M C Maj T S B Williams, I M S

To be Brevet Major—Capt. L. Dunbar R A.M C Capt. L. H L Mackenzie I M S Capt W McNaughton R A M C

Distinguished Service Order—Lt Col J H R Bond R.A M C Maj and Bt. Lt. Col G Browse I M S Capt (actg Lt. Col) E T Burke R.A.M C Spec Res Maj (temp Lt Col) A. B Fry I M S Maj S R Godkin I M S Capt. G R Lynn I M S Capt J S McCombe R A M C Capt W K. Morrison, R A.M C; Lt Col (acting Col.) H M Morton R A.M C Maj T G F Paterson, I M.S Lt. Col E L. Perry I M S Capt D C Pim, R A M C Spec. Res Lt. Col W A. Woodside R.A.M C

Bar to Military Cross—Capt C A. Wood M C I M S

Military Cross—Capt F J Anderson I M S Capt L D Bailey R A.M C Capt C H N Baker I M.S Capt W Bisset R A M C Temp Capt A. Budd R A.M C Capt H Chand I M S Temp Capt. A J Ireland R A.M C Capt J Melvin R A M C, Spec Res Capt. S H Middleton West, I M S Capt C H Reinhold I M S Capt E P A Smith R A M C Capt N S Sodhi I M S Temp Capt D McD Wilson R A.M C

THE CENTRAL MEDICAL WAR COMMITTEE

At a meeting of the Committee held on August 29th the following resolution was passed —

This meeting of the Central Medical War Committee represents to the Government that, in view of the composition of the Committee of Inquiry (the only intimation of which it has received through the public press) it is emphatically of opinion that unless at least the chairman of the Central Medical War Committee is added thereto the personnel of the new committee will not satisfy the opinion of the general body of medical practitioners in this country

The resolution has been communicated to the Secretary of State for War

THE IVORY CROSS AND "DEARER DENTISTRY"

It has been brought to the notice of the Council of the Ivory Cross that certain papers have announced in paragraphs obviously inspired by untrained dental practitioners, that the fees paid by this organisation have been raised Captain the Right Hon Lord Greville as chairman, states in reply that the fees accepted by the qualified dentists are exactly the same as paid by the Soldiers and Sailors' Dental Aid Fund, founded in 1914, of which the Ivory Cross is the outcome—this in spite of the increased cost of establishment charges and of all dental materials An additional strain is thereby thrown upon the patriotism of a professional class hard hit in many directions by the war All officials are volunteers giving their services, and the generous help of many specialists is at the disposal of the Fund, its good work grows daily in volume and is only limited by the amount of moneys subscribed by a generous public Donations in aid of its national work of mercy may be sent to the honorary treasurer, Sir Herbert Bartlett, Bart, 10, Conduit-street, W 1

TREATMENT OF DISABLED SOLDIERS IN SCOTLAND

Mr Duncan Millar asked the Minister of Pensions in the House of Commons recently to state the number of schemes which had been approved in Scotland for the treatment of disabled soldiers, and the arrangements which had been completed by the local committee set up in Scotland to deal with this subject Mr Barnes replied that no general schemes for the institutional treatment of disabled soldiers have yet been submitted by local committees in Scotland on the lines set out in the recent instructions issued by the Ministry of Pensions, but that the Statutory Committee have approved of the use of 240 institutions in Scotland, and local committees are able to send cases direct to these institutions in accordance with the terms of approval The Joint Institutional Committee for Scotland, which has lately been constituted, is now making arrangements for the purposes of a neurasthenic home near Edinburgh and for a number of orthopædic annexes. The treatment of discharged sailors and soldiers suffering from rheumatism is undertaken at Moffat and Strathpeffer, and the provision of increased accommodation for paraplegics and for men suffering from epilepsy and tuberculosis is under consideration

OBITUARY OF THE WAR

GEORGE STEPHEN PIRIE, M B, CH B EDIN,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain G S Pirie, who was killed in action in France on July 24th, on his twenty ninth birthday, was the second son of the late George Pirie, of Leopards Vlei and Wonder Heuvel, Cape Colony, and of Banff, Scotland He was educated at St Andrew's College, Grahamstown, South Africa, entering the University of Edinburgh in 1909, graduating M B, Ch.B with distinction in July, 1914 He then held the post of senior house physician at the Leith Hospital, resigning this appointment to take a commission in the Royal Army Medical Corps He was sent out to Gallipoli, where he saw much service with the Royal Fusiliers He was wounded and returned to England to recover Later he went to France as medical officer to the East Surrey Regiment, with which he remained until his death, being mentioned several times in despatches. While tending the wounded in the trenches he was instantly killed by a shell

Captain Pirie was popular with his fellow students and teachers at Edinburgh University, where he belonged to the medical unit of the O T C His superior officers write of him as an able medical officer who gave of his best to those under his care without thought of himself.

FRANK WHINCUP, F R C S EDIN,

LIEUTENANT ROYAL ARMY MEDICAL CORPS

Lieutenant F Whincup, who was accidentally drowned whilst bathing at Havre on July 2nd, at the age of 42 years, was the third and youngest son of the late Charles Todd Whincup, of Green Hammerton, Yorks He was educated at Leeds Grammar School and St Bartholomew's Hospital, taking the diplomas of the Conjoint Board in 1897 After holding resident appointments at the Royal Salop Infirmary, Shrewsbury, the Devon and Cornwall Hospital, Plymouth, and the Stroud General Hospital, he returned to Shrewsbury in 1900 to enter into general practice with Mr Harold H B MacLeod, and did much work at the Eye, Ear, and Throat Hospital as assistant and anæsthetist under Mr C G Russ Wood Three years ago he was elected physician to the Royal Salop Infirmary One of his colleagues there writes of him "It is, perhaps, at the infirmary, more than anywhere, that his loss to the profession will be most seriously felt He possessed a marvellously retentive memory, and never apparently forgot anything he had read or any case he had seen, and this faculty, coupled with his own keen observation and ripe judgment, rendered his opinion one of great value to his colleagues, medical and surgical alike Although in his forty-third year, and engaged in a large practice, he felt it his duty to offer himself to the R A M C, and in order to fit himself for military service he underwent an operation for radical cure of hernia and removal of an appendix which had caused him trouble It was his bright, cheery personality, his keen sense of humour, and his ever ready willingness to help either his patients or his professional brethren that endeared him to so many in and around Shrewsbury, where his loss is mourned by rich and poor alike"

JAMES HENRY HORTON, M R C S ENG,

DISTINGUISHED SERVICE ORDER

BREVET LIEUTENANT COLONEL, INDIAN MEDICAL SERVICE.

Lieutenant-Colonel James Henry Horton, who died of heat-stroke in Mesopotamia on July 23rd, at the age of 46 years, was eldest son of Major James Horton, retired, 4th Dragoon Guards He was educated at Guy's Hospital, where he won the Arthur Durham Prize, and after qualifying in 1895 held a house appointment at his own hospital and afterwards at the Priory, Roehampton, and the Bethlehem Hospital From 1899-1901 he was plague medical officer at Bombay, and in 1902 entered the Indian Medical Service, winning the Marshall Webb Prize while at the military school, Netley In Somaliland (1903-04) he took part in the actions of Daratolah and Iidhalli, receiving mention in despatches and being awarded the D S O In 1908 he was with the Mohmand Field Force, getting the medal and clasp. In the Balkan War (1912-13) he acted as a surgeon of the British Red Cross Society, again obtaining a medal and clasp. At the outbreak of hostilities he was personal assistant to the surgeon general with the Government of Bombay, and was sent to Mesopotamia as Deputy Assistant Director of Medical Services, being present at the relief of Kut and the capture of Bagdad. He was twice mentioned in despatches Colonel Horton also held the Order of St George and St. Vladimir of Russia

FREDERICK CECIL HOLMAN PIGGOTT, M D CAMB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS

Captain F C H Piggott, who died very suddenly at the Military Hospital, Sutton, on June 24th, at the age of 57 years, was educated at Merchant Taylors School and Emmanuel College, Cambridge, where he was a scholar and prizeman, continuing his medical studies at St Thomas's Hospital After taking the diploma of M R C S Eng in 1884 he was sent out by the National Aid Society as surgeon in the Sudan campaign of 1885, obtaining the medal and clasp "Suakim" and Khedive's bronze star and acting as H B M's Consul for East Sudan In the following year he took his medical degree at Cambridge, afterwards settling in practice at Teignmouth, where he became honorary consulting physician to the hospital and medical officer of health to the urban district and port sanitary authority During the first year of the war he gave up his extensive practice to take a commission in the Royal Army Medical Corps, being appointed specialist sanitary officer of the Wylye Valley district His death makes a blank in a wide circle of friends Captain Piggott leaves a widow and a son and daughter

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

C S Woodwright to be Deputy Surgeon General

Surgeon W H Cheyne, who relinquished his appointment on account of ill health contracted in the Service to retain his rank

Fleet Surgeon R Miller is placed on the Retired List, at own request with rank of Deputy Surgeon General.

To be temporary Surgeons R. Silcock, G W Pratt, and K. R Hill

The following appointments have been notified —Fleet Surgeons R W Townley and E A. Shaw to *Pembroke* M P Jones, J D Milligan and A. W Walker all to *Vivid* Staff Surgeons W N Blatchford to *Vivid* J H. Wright to Chatham *Dockyard* Surgeon S L. McBean to *Victory* Temporary Surgeons: A. W Gunn and D S MacKnight to *Pembroke* C H Gould to *Research* for Portland Hospital F A. Knott to *Achilles* W P Jones to *Harrier* M Fawkes to *Europa* A. McMillan to *Pembroke* W Duncan to *Emperor of India.*

ROYAL NAVAL VOLUNTEER RESERVE.

The following appointment has been notified —Surgeon Probationer: G Burnett to *Legion*

ARMY MEDICAL SERVICE

Col F W C Jones C.B is retained on the Active List under the provisions of Arts 120 and 522, Royal Warrant for Pay and Promotion, and to be supernumerary

Lieutenant-Colonels to be temporary Colonels whilst employed as Assistant Directors of Medical Services G W Tate, F E Gunter

Capt. W. C Smales, D S O R A.M C to be Deputy Assistant Director General

Temp Major F B Carron, Canadian A.M.C relinquishes his appointment as Deputy Assistant Director of Medical Services

Temp. Capt. H. C Mersereau Canadian A.M C relinquishes his appointment as Deputy Assistant Director of Medical Services

TERRITORIAL FORCE.

Col J B Mann relinquishes his commission on account of ill health and is granted permission to retain his rank and wear the prescribed uniform

Lieut.-Col. R Pickard, C.M G to be Assistant Director of Medical Services and to be temporary Colonel whilst so employed.

Capt H M Calder D S O M.B to be Deputy Assistant Director of Medical Services

ROYAL ARMY MEDICAL CORPS

The undermentioned officers are granted temporary rank as stated — As Lieutenant-Colonels: Lieut. Col. H. Maturin Hamps R Lieut. Col. J F Haswell, Bord R. Temp Lieut.-Col. F R. Hill R.F.A. As Majors Major F R S Cosens Devon. R Major T B Heggs E. Kent R.

Lieut -Col G J A. Ormsby D.S O to be temporary Colonel whilst an Assistant Director of Medical Services of a Division

Temp Lieut. Col R P Jack (T F) to be temporary Lieut. Colonel

Major (temp Lieut -Col.) E McDonnell D S O to be an Assistant Director of Medical Services of a Division and to retain his temporary rank whilst so employed

Major W J Waters to retain the acting rank of Lieutenant-Colonel whilst in command of a Stationary Hospital

To be acting Lieutenant Colonels whilst in command of a General Hospital: Major T B Fielding D.S O Temp Major H H Serpell.

To be acting Lieutenant Colonels whilst in command of a Casualty Clearing Station: Major Walter J Waters Major E W Siberry and Major J M H Conway D S O Capt. H. G Monteith D S O whilst in command of a Field Ambulance.

The undermentioned Majors to be acting Lieutenant Colonels whilst in command of a Stationary Hospital R. B Hole (Bt Lieut. Col) Charles R Sylvester Bradley

Temporary Majors to be temporary Lieutenant Colonels O S McVicar and W J O Malloch

Capt R E. U Newman M C to be acting Lieutenant Colonel whilst in command of a Field Ambulance

Temp Capts A W Robertson and S G Chown to be temp Majors

Temp Capts D A. L Graham W H Lowry and R G Armour to be acting Majors while temporarily employed

To be Acting Majors Capt. H A Hammick, Manch R., T F whilst holding a special appointment Surg Gen. T P Woodhouse C B Col R J Windle and Temp Capt H E Cumming Canadian A.M C

Temp Lieuts E S Jeffrey C G McAdam, H Harrison, G H U Corbett A. B Moffat H. O'Neill H R Bayley and E. K. Campbell to be temporary Captains

To be temporary Honorary Lieutenants C E. Allison M C Pruitt R G Carothers J F Harvey L. K Valade and F A Simonds.

H. F Bold Williams to be temporary Honorary Lieutenant whilst doing duty with No 8 Red Cross (Baltic and Corn Exchange) Hospital

Officers relinquishing their commissions Temp Capts G S Miller (granted the honorary rank of Captain), J H Patterson R. V McDonnell M.C F J Livingston and V F Stock and D Villeald (on account of ill-health) and Temp Lieuts R D Ferguson and J Young

Lieut. Col (temp. Col.) P Evans C M G relinquishes his temporary rank on re-posting

The undermentioned relinquish the acting rank of Lieutenant Colonel on re-posting Major W C Croly Capt. J L. Wood.

SPECIAL RESERVE OF OFFICERS

Major J Clerke to be acting Lieutenant-Colonel whilst in command of a Stationary Hospital

Capt (temp Major) E. M Jenkins relinquishes his temporary rank on ceasing to command a Field Ambulance.

Lieutenants to be Captains: D Stewart, L P Johns

Capt A. T Pitts from R.A M C T F., to be Captain.

To be Lieutenants: T W Shaw J W Bowman and C A. Harvey (from Aberdeen University Contingent O T C) J Irvine and J Kinnear (from St. Andrews University Contingent O T C) D J Valentine C M Titterton, S W Page, and E H Glenny (from the University of London Contingent O T C) F J Charlton (from St Andrews University Contingent O T C) H B Dykes (from Edinburgh University Contingent O T C) G K Fulton W Adams R Aitken T Fleming J S Martin N MacKillop W Dempster, R P Irving J H Shearer W McWilliam J Ashforth, and J S Craig (from Glasgow University Contingent O T C) H E Charles C H Smith P Shillito N Pick G F Hurst H V Horsfall, J H Parker S Adler P V Anderson and H J Rice (from Leeds University Contingent O T C) Second Lieut. G F Mitchell (from Unattached List T F)

Capt A G W Compton M C relinquishes his commission on account of ill health

TERRITORIAL FORCE.

Lieut -Col. H W Webber is seconded for duty with a General Hospital

Major P G Williamson, M.C to be acting Lieutenant Colonel whilst commanding a Field Ambulance

Capt (acting Lieut -Col) R W Brimacombe to be Major and acting Lieutenant Colonel

Capt S G Webb and Capt J Gilchrist are restored to the establishment

Capt J G Emanuel is seconded for duty with a General Hospital

Capt J W Mackenzie to be Major

Lieuts N J Allan and W Brander to be Captains

Capt. H M Calder D S O M B is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services

Lieut Col R. Pickard C M.G is seconded whilst holding an appointment as Assistant Director of Medical Services

Capt F J Stansfield is restored to the establishment.

Capt R Michell is restored to the establishment

Capt. A R Short is seconded for duty with a Casualty Clearing Station

Major C J Martin from Army Medical Service to be Major

Majors W D Watson and W A. Burns to be acting Lieutenant-Colonels whilst commanding Field Ambulances

Major (acting Lieut. Col) W A. Burns, Capt (acting Lieut Col) J Blackwood and Capt (temp Major) D E Evans relinquish their acting rank on ceasing to command Field Ambulances

VOLUNTEER FORCE.

Northamptonshire Medical Volunteer Corps E H Harries-Jones to be temporary Major and A. W Cooke to be temporary Captain

OVERSEA CONTINGENTS

Canadian Army Medical Corps

Temp Major F C. Bell to be acting Lieutenant Colonel while specially employed

Temp Capt (acting Major) A. Croll to be acting Lieutenant-Colonel while specially employed

Temporary Captains to be temporary Majors: G Musson E C H Windeler A. MacPhail F S Burke

Temp Capt. W Ross to be acting Major while specially employed

Temp Capt W J Enright to be acting Major

Temp Capt (acting Major) P Poisson, M.C to be temporary Major

Temp Capt G M Davis to be acting Major while specially employed

Temporary Lieutenants to be temporary Captains R H Angrove N H. Little J R. Rehill T D Bennett

To be temporary Captains H D L Spence W B Honey

Temporary honorary Lieutenants to be temporary honorary Captains without pay and allowances F F Tisdall E K Clarke

South Africa

T L Blackburn to be temp Captain South African Medical Corps

INDIAN MEDICAL SERVICE

Bt Lieut Col F Wall to be Assistant Director of Medical Services

Capt. W E R Williams to be Deputy Assistant Director of Medical Services

The King has approved the retirement of Lieut Col A. W Dawson (in consequence of ill health due to field service) and Lieut.-Col E C Hare (in consequence of ill health)

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS

In the July issue of this journal which begins a new volume Captain David Thompson concludes his long article on the Diagnosis and Treatment of Malarial Fever With regard to the treatment he says In all cases whether acute chronic or latent and in cases of gamete carriers commence a thoroughly routine treatment as early as possible with the idea of obtaining a permanent cure from the beginning The treatment may be considered severe but it pays and it means that less quinine will be needed in the long run." Ten to 15 grains of quinine in solution are given by the mouth three times daily for three weeks hypodermic injections in some cases, and small doses of liquor arsenicalis Temporary Colonel Andrew Fullerton consulting surgeon to the British Expeditionary Forces describes the use of the opaque ureteral catheter to localise missiles in the region of the kidney and ureter and Major A R Ferguson contributes some notes on bilharziasis, in which he says the essential facts with regard to its mode of infection are now so well known that the necessary measures for its avoidance may be made precise and should be stringently enforced in the hope that military efficiency may not be impaired in the immediate future and that the country may be saved the payment of large sums in compensation to men who need not have been infected Captain W J Tulloch has a paper on the differentiation by means of the absorption of agglutinin test of the types of meningococci obtained from the cerebrospinal fluid Major F W Mott's paper on Punctiform Hæmorrhages of the Brain in Gas Poisoning read before the Royal Society of Medicine is reprinted and there are some interesting notes on the venereal division of the general hospital Alexandria, by Captain W C Jardine. Possibly " says the author "as a result of the lectures on venereal disease which have been given to troops in Egypt and of the stories told by the venereal patients on discharge from hospital we find that the soldiers report sick very early in fact usually as soon as the sore appears On this account we rely a great deal on our bacteriologist for an early diagnosis of syphilis Cases with well marked secondaries are diagnosed clinically and put under treatment at once. . . . The average period in hospital for patients has been: Syphilis, 39 days gonorrhœa, 34 days soft chancre 30 days "

Correspondence.

"Audi alteram partem.

ARGUMENT AND AGREEMENT

To the Editor of THE LANCET

SIR,—The plain man finds it somewhat disconcerting to note how often nowadays eminent medical controversialists are complaining that their arguments are misunderstood by their opponents, or that they themselves fail completely to comprehend those of the other side Phrases such as "I frankly confess I don't understand him," and "It is quite apparent that he does not understand me" are of distressingly frequent occurrence Yet it is quite obvious that in the case of two such men as Sir Clifford Allbutt and Sir James Mackenzie neither can possibly be as "slow in the uptak'" as is implied The matter is really, I think, a code difficulty Each talks in a language foreign to the other, and translation is imperfect Some interesting considerations seem thereby to present themselves

As we come more closely to grips with the nature of things, we leave farther and farther behind us those elemental crudities of thought which can be fairly accurately expressed and conveyed to another mind by the agency of the written or spoken word When the thoughts and ideas we have to transmit become more and more subtle, we become increasingly conscious of the unsatisfactory nature of the medium of intercourse and the thought leakage which occurs owing, as it were, to the high resistance encountered in transmission Is it necessary to conclude, then, that the ideas now to be conveyed are so subtle and tenuous that we may be faced ultimately with a bankruptcy of language, and that thought may so far outstrip its codes of expression that progress may be seriously hampered thereby? There are, at any rate, some remedies we can apply before things come to such a pass

It is due to an imperfect appreciation of these considerations that we find such a mass of merely verbal criticism in present-day scientific communications—so much argument and so little agreement In order that progress may be made economically without unnecessary waste of time and effort, it is just as important to ascertain where we are in agreement with others as where we differ from them The possibility that another man may be using a different code from the one to which we are accustomed, or may indeed have originated, is not always suspected The recent controversy between *Professor* Bayliss and Mr MacDonagh is an excellent case in point Many misunderstandings would be avoided did a debater endeavour faithfully to translate the code of the other man before coming to the conclusion that the opponent is writing nonsense. If we see a paper in a foreign language with which we are imperfectly acquainted we do not condemn its statements until we are satisfied that we have made an accurate translation It is perhaps natural, however, to be a little intolerant, and to wish to impress our own particular code upon all men

I do not wish it to be thought that I hold any brief for inaccuracy or obscurity in expression, but we have to remember that, unfortunately, Raphael Hythlodaye did not preserve for us the Utopian alphabet The best remedy, failing a perfect code, is to make as sure as we can that the ideas conveyed to our minds are identical with those originating in the mind of a writer, not forgetting that, as Thoreau said of truth, it takes two to express a thought If we were more careful over our translations we should find doubtless that many truths, hotly debated, were in reality denied by none, and new truths would have a better chance of acceptance, because they would stand out more clean cut and clear

I am, Sir, yours faithfully

E W ADAMS

August 28th 1917

THE STUDY OF FUNCTION IN DISEASE

To the Editor of THE LANCET

SIR,—In a leading article in THE LANCET of May 26th, p 805, the importance of considering the functional capacity of organs, even when diseased, is insisted on, and although it is often extremely important to understand the exact pathological condition of any organ, we should, I think, remember that from the patient's standpoint, except in so far as such knowledge can favourably influence treatment the actual condition of an organ may be immaterial, the important feature, from his point of view, is how far he can go on with his work and what his ultimate prospects in life are going to be Thus, in a disease so common as tuberculosis many individuals have lesions which may or may not be demonstrated physically, or by the X rays, which nevertheless give rise to no symptom of ill health, and may never cause any trouble even in the course of a long life We are therefore thrown back on some other method of discovering the necessity or otherwise for treatment, and we shall find that our only resource consists in a consideration of the patient's symptoms together with accurate estimations of the temperature Too often, time which is most valuable at a given stage of disease is put off, whilst we wait for some event which will clinch the diagnosis, time which should have been used in bringing about the cessation of the symptoms and which in many instances would have prevented the occurrence of such evidence as the finding of tubercle bacilli in sputum

In this connexion I do not think that my old and honoured preceptor Sir Thomas Clifford Allbutt is quite so hidebound in tradition as Sir James Mackenzie would imply In 1904 he allowed me to take my M.D degree at Cambridge for a thesis on the diagnosis of pulmonary tuberculosis which was largely a plea for the recognition of pulmonary tuberculosis not from physical signs but from symptoms In the final paragraph but one of this thesis which has not been published, occurs the following sentence

> 'In the consideration of diagnosis physical signs have been ignored, not in any spirit of disparagement nor yet because less able to appreciate them than some others, but rather in the belief that it is from symptoms and not from these that we shall gain most information at a time when diagnosis is still useful'

Sir James Mackenzie in THE LANCET of August 18th urges the importance of considering "the patient's sensations" as the most important factor as a warning of the onset of serious and, perhaps, if not treated correctly, of fatal disease, although he is chiefly concerned in his letter with heart disease, a matter with which I do not feel competent to deal, yet his observations certainly apply with great force to the diagnosis of pulmonary tuberculosis For some years now I have endeavoured to insist that the most important matter in the diagnosis of pulmonary tuberculosis is the examination of symptoms which, of course, largely deals with the patient's sensations Until this matter is taken up by the profession, it is quite useless propounding schemes for the eradication and successful treatment of this malady Fortunately in tuberculosis it is much easier than in diseases of the heart to analyse a patient's sensations. It is eminently true of tuberculosis that "long before physical signs are evident the patient is conscious there is something amiss," also that "disease when it is so far advanced as to produce a physical sign, which means usually damage to the tissues, and is therefore beyond the stage of cure, is admitted to the hospital wards" (*so* sanatorium)

Many even now regard the finding of tubercle bacilli as a correct means of diagnosing pulmonary tuberculosis, for the purpose of deciding whether a patient should undergo sanatorium treatment If I might be allowed to give an opinion, such a discovery more often means that the patient has passed beyond the early stage, and therefore is not a suitable case for treatment in a sanatorium, even in chronic cases, which often go on for years it will often be found difficult to find the tubercle bacillus, and when these do appear abundantly and are found easily, as a rule the course of the disease is not long protracted

I am, Sir yours faithfully

EDWARD E PREST

Ayrshire Sanatorium New Cumnock August 28th 1917

RAT-BORNE FEVER

To the Editor of THE LANCET

SIR,—I was very pleased with the suggestion contained in the annotation on rat-borne fever appearing in THE LANCET of August 11th that there may be a causal connexion between rats and trench fever So long ago as the spring of 1915 I had this idea in mind when gathering material for a clinical note which you published in THE LANCET of Sept 25th, 1915, under the title "Rela psing Febrile Illness of Unknown Origin." I had read accounts of rat-bite fever in several text-books, and its close resemblance to the illness I noted and described struck me forcibly. I mentioned my suspicions to several bacteriologists from time to time, but so far none have produced evidence to confirm them. Subsequent clinical observations show that trench fever (as the illness I described is now called) does in the acute paroxysmal stage often drag on for weeks, and though, on the other hand, there are some who recover rapidly, there are others who remain debilitated for long after the acuter phases have passed.—I am, Sir, yours faithfully,

J. H. P. GRAHAM.

August 2[illegible]th, 1917.

URBAN VITAL STATISTICS

VITAL STATISTICS OF LONDON DURING JULY, 1917.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 3·5 per 1000 of the population, estimated at 4,237,237 persons; in the three preceding months the rates were 3·7, 3·5, and 3·4 per 1000 respectively. The lowest rates for the month were recorded in Paddington, Chelsea, the City of Westminster, Finsbury, and the City of London, and the highest rates in Bethnal Green, Southwark, Bermondsey, Wandsworth, Camberwell, and Greenwich. Scarlet fever was rather more prevalent than it had been in other recent months; the greatest proportional prevalence of this disease was recorded in Bethnal Green, Poplar, Bermondsey, Wandsworth, Camberwell, and Greenwich. The Metropolitan Asylums Hospitals contained 6[illegible] scarlet fever patients at the end of the month, against 712, 613, and 595 at the end of the three preceding months; the weekly admissions averaged 101, against 93, 92, and 63 in the three preceding months. The prevalence of diphtheria was also slightly in excess of that recorded in the two preceding months; this disease was proportionally most prevalent in St. Pancras, Holborn, Stepney, Southwark, Bermondsey, Deptford, and Greenwich. The number of diphtheria patients remaining under treatment in the Metropolitan Asylums Hospitals at the end of the month was 1070, against 1048 and 1012 at the end of the two preceding months; the weekly admissions averaged 142, against 129 and 133 in the two preceding months. Enteric fever was more prevalent than it had been in any of the earlier months of the year; of the 44 cases notified during July 8 belonged to Hammersmith, 6 to Wandsworth, 4 to Kensington, 4 to Stepney, 4 to Lambeth, 3 to Poplar, and 3 to Camberwell. There were 41 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of July, against 25, 27, and 31 at the end of the three preceding months; the weekly admissions averaged 7, against 6 in each of the two preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, St. Pancras, Shoreditch, Deptford, and Greenwich. Of the 9 cases of puerperal fever notified during the month 2 belonged to Chelsea. The 15 cases of cerebro-spinal meningitis included 2 in Hackney and 2 in Camberwell, and the 2 cases of poliomyelitis belonged respectively to Stepney and Wandsworth.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending July 28th the deaths of 3535 London residents were registered, equal to an annual rate of 10·9 per 1000; in the three preceding months the rates had been 16·2, 13·9, and 12·0 per 1000 respectively. The death rates for the month ranged from 5·2 in the City of London, 8·4 in Lewisham, 8·5 in Fulham, 8·8 in Wandsworth, and 8·9 in Woolwich, to 12·3 in Finsbury, 12·6 in Stoke Newington, 12·7 in Bermondsey, 13·2 in Shoreditch, 13·7 in Holborn, 13·8 in Deptford, and 15·3 in Southwark. The 3535 deaths from all causes included 219 which were referred to the principal infectious diseases; of these 59 resulted from measles, 6 from scarlet fever, 37 from diphtheria, 34 from whooping-cough, 11 from enteric fever, and 72 from diarrhoea and enteritis among children under 2 years of age. No death from any of these diseases was recorded during the month in St. Marylebone, Holborn, or the City of London; among the other boroughs they caused the lowest death rates in the City of Westminster, Wandsworth, Lewisham, and Woolwich, and the highest rates in Finsbury, Poplar, Southwark, and Deptford. The 59 deaths from measles were somewhat below the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal in Paddington, Kensington, Hammersmith, Islington, Finsbury, and Deptford. The 6 fatal cases of scarlet fever were only one-third of the corrected average number, and belonged respectively to Paddington, Kensington, Hackney, Shoreditch, Lambeth, and Wandsworth. The 37 deaths from diphtheria were equal to the corrected average number, and included 5 belonging to Poplar, 5 to Southwark, 4 to St. Pancras, and 4 to Lambeth. The 34 fatal cases of whooping-cough were 24 below the corrected average, and included 4 in Poplar, 4 in Camberwell, and 3 each in Fulham, Islington, Hackney, Stepney, and Battersea. The 11 deaths from enteric fever were slightly below the corrected average number, and included 2 each in Southwark, Bermondsey, and Lambeth. The 72 fatal cases of diarrhoea and enteritis among children under 2 years of age were 23 below the corrected average; the greatest proportional mortality from this cause was recorded in Kensington, Fulham, Chelsea, and Southwark. In conclusion, it may be stated that the aggregate mortality in London during the month from these principal infectious diseases was nearly 25 per cent. below the average.

(Week ended August 18th, 1917.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17,000,000 persons, the annual rate of mortality was 10·5 per 1000, against 11·2, 10·3, and 10·4 per 1000 in the three preceding weeks. In London, with a popu-

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING JULY, 1917.

(*Specially compiled for* THE LANCET.)

		Notified Cases of Infectious Disease												Deaths from Principal Infectious Diseases										
CITIES AND BOROUGHS	Estimated civil population, 1916	Small pox	Scarlet fever	Diphtheria*	Typhus fever	Enteric fever	Other continued fevers	Puerperal fever	Erysipelas	Cerebro-spinal meningitis	Poliomyelitis	Total	Annual rate per 1000 persons living	Small pox	Measles	Scarlet fever	Diphtheria*	Whooping cough	Enteric fever	Diarrhoea and enteritis (under 2 years)	Total	Annual rate per 1000 persons living	Deaths from all causes	Death rate per 1000 living
LONDON	4,237,357	—	399	560	—	44	—	9	117	15	2	1145	3·5	—	59	6	37	34	11	72	219	0·8	3535	10·9
West Districts																								
Paddington	130,663	—	5	9	—	—	—	—	—	1	—	15	1·5	—	6	1	—	—	—	1	8	0·8	94	9·4
Kensington	152,144	—	15	13	—	4	—	—	5	1	—	38	3·2	—	5	1	1	—	—	5	12	1·0	134	11·5
Hammersmith	117,955	—	8	12	—	8	—	—	5	—	—	33	3·6	—	5	—	1	1	1	—	8	0·9	95	10·6
Fulham	149,423	—	14	13	—	1	—	—	—	1	—	29	2·5	—	—	—	1	3	—	6	10	0·9	93	8·5
Chelsea	57,293	—	1	7	—	—	—	2	—	—	—	10	2·3	—	—	—	—	1	—	3	4	0·9	48	10·9
City of Westminster	132,853	—	4	14	—	—	—	—	2	—	—	20	2·0	—	—	—	—	—	—	1	1	0·1	104	10·2
North Districts																								
St. Marylebone	98,573	—	6	7	—	—	—	—	6	—	—	19	2·5	—	—	—	—	—	—	—	—	—	81	10·7
Hampstead	81,470	—	6	10	—	—	—	—	3	—	—	19	3·0	—	2	—	—	—	1	1	4	0·6	61	9·8
St. Pancras	196,812	—	17	35	—	2	—	—	9	—	—	63	4·2	—	4	—	4	2	—	4	14	0·9	178	11·8
Islington	329,359	—	33	39	—	—	—	—	5	1	—	78	3·2	—	12	—	2	3	—	—	17	0·7	280	11·0
Stoke Newington	49,776	—	1	7	—	—	—	—	1	—	—	9	2·4	—	—	—	1	1	—	—	2	0·5	48	12·6
Hackney	209,625	—	17	17	—	2	—	1	6	2	—	45	2·8	—	4	1	1	3	—	4	13	0·8	153	9·5
Central Districts																								
Holborn	38,161	—	3	7	—	—	—	—	—	—	—	10	3·4	—	—	—	—	—	—	—	—	—	40	13·7
Finsbury	74,230	—	3	6	—	—	—	—	—	—	—	9	1·6	—	3	—	—	1	—	2	6	1·1	70	12·3
City of London	20,113	—	1	—	—	—	—	—	1	—	—	2	1·3	—	—	—	—	—	—	—	—	—	8	5·2
East Districts																								
Shoreditch	99,932	—	7	13	—	1	—	—	5	—	—	26	3·4	—	3	1	—	—	—	2	6	0·8	101	13·2
Bethnal Green	115,552	—	22	11	—	—	—	1	3	1	—	38	4·3	—	2	—	1	—	1	2	6	0·7	95	10·8
Stepney	258,336	—	15	45	—	4	—	1	10	—	1	80	4·0	—	8	—	2	3	—	7	20	1·0	218	11·0
Poplar	155,095	—	18	23	—	3	—	1	4	1	—	50	4·2	—	5	—	5	4	1	4	19	1·6	137	11·5
South Districts																								
Southwark	177,166	—	18	33	—	1	—	—	4	1	—	62	4·6	—	4	—	5	1	2	7	19	1·4	203	15·3
Bermondsey	113,661	—	25	21	—	—	—	—	4	1	—	51	5·8	—	—	—	2	—	2	2	6	0·7	111	12·7
Lambeth	283,729	—	14	23	—	4	—	—	10	1	—	57	2·6	—	5	1	4	—	2	4	16	0·7	247	11·3
Battersea	159,432	—	17	13	—	2	—	—	2	—	—	39	3·2	—	4	—	1	3	1	3	12	1·0	121	9·9
Wandsworth	310,853	—	41	42	—	6	—	—	8	1	1	88	4·2	—	1	1	—	2	—	1	5	0·3	209	8·8
Camberwell	249,749	—	32	29	—	3	—	1	5	2	—	72	3·8	—	5	—	2	4	—	3	14	0·7	224	11·7
Deptford	107,636	—	1	28	—	1	—	1	4	—	—	39	4·7	—	8	—	—	—	—	2	10	1·2	114	13·8
Greenwich	94,432	—	35	23	—	1	—	1	5	—	—	71	9·8	—	2	—	2	1	—	2	7	1·0	82	11·3
Lewisham	162,901	—	13	1	—	1	—	—	[illegible]	1	—	32	2·6	—	—	—	1	—	—	3	4	0·3	105	8·4
Woolwich	130,313	—	5	17	—	—	—	—	2	—	—	24	2·4	—	1	—	1	1	—	2	5	0·5	89	8·9
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

lation exceeding 4,000 000 persons, the death rate was 10 7, or 0 4 per 1000 above that recorded in the previous week among the remaining towns the death rates ranged from 3 2 in Ealing 5 0 in Cambridge and 5 5 in Edmonton, to 19 7 in Southend-on Sea, 20 3 in Huddersfield, and 21 1 in Dewsbury The principal epidemic diseases caused 338 deaths, which corresponded to an annual rate of 1 0 per 1000 and included 200 from infantile diarrhœa, 55 from measles, 34 from whooping-cough 28 from diphtheria 11 from scarlet fever 9 from enteric fever and 1 from small pox The deaths from diarrhœa which had increased from 53 to 180 in the four preceding weeks further rose to 200 and included 60 in London 21 in Liverpool 11 in West Ham and 9 each in Manchester and Leeds The fatal case of small pox belonged to Smethwick The 627 cases of scarlet fever and 1062 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 6 and 9 below the numbers remaining at the end of the previous week Of the 3412 deaths from all causes in the 96 towns 144 resulted from violence The causes of 37 deaths were uncertified, of which 4 were recorded in Stoke-on Trent, in Birmingham and in Liverpool and 3 in Leicester but not one in London.

Scotch Towns—In the 16 largest Scotch towns with an aggregate population estimated at 2,600 000 persons the annual death rate was 11 7 against 10 8 and 11 2 per 1000 in the two preceding weeks The 269 deaths in Glasgow corresponded to an annual rate of 12 6 per 1000, and included 29 from infantile diarrhœa 8 from whooping cough, 2 from measles and 1 from diphtheria The 88 deaths in Edinburgh were equal to a rate of 13 8 per 1000 and included 2 from diphtheria and 1 from whooping cough

Irish Towns—The 108 deaths in Dublin corresponded to an annual rate of 14 1 per 1000 and included 22 from infantile diarrhœa and 1 from diphtheria. The 85 deaths in Belfast were equal to a rate of 11 3 per 1000 and included 5 from infantile diarrhœa and 1 from whooping-cough

(Week ended August 25th, 1917)

English and Welsh Towns—In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 10·6 against 10 3 10 4 and 10·5 per 1000 in the three preceding weeks In London with a population exceeding 4 000 000 persons the death rate was 10 5 or 0·2 per 1000 less than in the previous week among the remaining towns the death rates ranged from 3 8 in Wimbledon 4 5 in Eastbourne, and 5 2 in Carlisle to 16 9 in York 17 3 in Tynemouth, and 20·9 in Stockton on Tees The principal epidemic diseases caused 411 deaths which corresponded to an annual rate of 1 3 per 1000 and included 274 from infantile diarrhœa, 66 from measles 30 from whooping-cough, 27 from diphtheria 10 from enteric fever and 4 from scarlet fever The deaths from diarrhœa, which had increased from 53 to 200 in the five preceding weeks further rose to 274 and included 72 in London 40 in Liverpool 22 in Manchester and 16 in Leeds The 614 cases of scarlet fever and 1063 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 13 below and 1 above the numbers remaining at the end of the previous week Of the 3463 deaths from all causes in the 96 towns 135 resulted from violence. The causes of 23 deaths were uncertified and included 6 in Birmingham 3 in Liverpool and 2 each in Stoke-on Trent and Manchester

Scotch Towns—In the 16 largest Scotch towns with an aggregate population estimated at nearly 2 500 000 persons the annual death rate was 10 3, against 11 2 and 11 7 per 1000 in the two preceding weeks The 245 deaths in Glasgow corresponded to an annual rate of 11 4 per 1000, and included 32 from infantile diarrhœa 9 from whooping cough 5 from measles and 2 from diphtheria. The 46 deaths in Edinburgh were equal to a rate of 7·2 per 1000 and included 1 from scarlet fever

Irish Towns—The 149 deaths in Dublin corresponded to an annual rate of 19 5 or 4 4 per 1000 above that recorded in the previous week and included 38 from infantile diarrhœa and 1 each from enteric fever whooping cough, and diphtheria. The 87 deaths in Belfast were equal to a rate of 11 5 per 1000 and included 7 from infantile diarrhœa

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IRISH VITAL STATISTICS FOR 1916—During 1916 the marriage rate in Ireland (5 45 marriages per 1000 of the population) was 0 44 per 1000 under that for 1915 and 0·11 under the average for the 10 years 1906–15 The birth rate (21 1 per 1000 of the population) was 0 9 per 1000 under the rate for 1915 and 1 9 under the average for the 10 years 1906–15, and is the lowest ever recorded in Ireland The death rate was 16 46 per 1000, being 1 10 under the rate for 1915 and 0 55 under the average for the 10 years 1906–15 With the exception of the rate for 1912, which was 16 45, and that for 1914 (16 28), the death rate is the lowest since 1871 Turning to tuberculosis, the death rate was for all forms of the disease 2 15 per 1000 With the exception of 1912 (in which the rate was also 2 15), 1913 (2 14), and 1914 (2·07), the rate for 1916 was the lowest recorded in Ireland, but there is little to boast of when we consider that in the same year in England and Wales the mortality rate from consumption in all its types was 1 53 per 1000 and in Scotland 1 59 The infantile mortality was in Ireland during 1916 83 per 1000 births, being 9 under the rate (that is, per 1000 births) for 1915, and also 9 under the average for the 10 years' period 1906–15 The rate it is satisfact[illegible] is the lowest yet recorded The satisfact[illegible] he vital statistics for 1916 in Ireland[illegible] *To the Editor* rate generally the fall in the tuberc[illegible] leading article the slight improvement in the annual[illegible]ts, but it is most extraordinary to find t[illegible]portance of of all countries—there was during 1916 the lowe[illegible]when diser yet recorded, and that never were there so few[illegible] imports in Ireland as in 1916, notwithstanding that[illegible]anye ever remembers the country so prosperous, and[illegible], owing to the absence of compulsory service, so few m[illegible]—that is in comparison with England and Scotland—went to the war

Medical News.

SOCIETY OF APOTHECARIES OF LONDON—At examinations held recently the following candidates passed in the subjects indicated

Surgery—J L D Buxton (Sections I and II), University College Hospital and S G Mahomed Liverpool

Medicine—G S Ashby (Sections I and II) King's College Hospital J Bebesnillan (Section I) and C G Bunn (Section I) Charing Cross Hospital B F Deacon (Section I), Guy's Hospital F C M Gabites (Sections I and II), Edinburgh I Liberman (Sections I and II), Leeds A G Curzon Miller (Section I) Middlesex Hospital; and L. Zarchi (Section I) Petrograd and Royal Free Hospital

Forensic Medicine—B A M Henderson Manchester and Charing Cross Hospital I Liberman Leeds and G L Mitchell Glasgow and Birmingham

Midwifery—D A. Dyer St. George's Hospital, B A M Henderson Manchester and Charing Cross Hospital I Liberman, Leeds and J Stephen Manchester

The Diploma of the Society was granted to the following candidates entitling them to practise medicine surgery and midwifery W Fletcher Barrett, St George's Hospital; C A W Chapman Sheffield D C Clark King's College Hospital E W Diggett, Jefferson College, Philadelphia A Selby Green Middlesex Hospital, D B Hearn Durham E J G Sargent St. Bartholomew's Hospital C Segal, Berne and Birmingham and ~~J R Sharp London Hospital~~

ROYAL MEDICAL BENEVOLENT FUND—At the last meeting of the committee, held on August 14th, 29 cases were considered and £306 voted to 25 of the applicants The following is a summary of some of the cases relieved —

Widow aged 69 of L.R C.P Edin who practised at High Wycombe and Holt and died in June 1917 and was an annuitant of the Fund Applicant's only income is £1 per week and owing to the long illness of her husband requiring constant nursing her health is undermined and she requires a change Voted £10 in two instalments.—M.D Lond. aged 50 who practised in London and Perth, South Australia. Applicant has suffered from paralysis for the last ten years His wife is in a home and her income is only sufficient for herself and for the education of the two children ages 16 and 17 Applicant's income £50 a year which he finds insufficient owing to the increased cost of food Voted £26 in 12 instalments—Daughter, aged 36 of M.R.C S Eng who died in 1887 Applicant has had to look after her mother who has recently died, and her income was only a life annuity so the daughter is left entirely without means and now wants help to be trained for secretarial work Voted £10—Children twins aged 5 years, of an M D Edin. who died in 1916, and the mother in 1914 There is also a boy aged 7, but the grandmother has adopted him Help is required towards the keep of the twins who are at present with an uncle who cannot afford to keep them Voted £12 in 12 instalments—Widow aged 39 of M B Edin who practised in South Africa and was killed in action in September 1916 He came over to England soon after the war commenced hoping to be able to join the R A.M.C or the Red Cross Society but had to wait so long that he joined a London Regiment as a private He left his wife and two children ages 8 and 9 in South Africa With the exception of what she can earn (at present is acting as temporary housekeeper) her only income is 18s 6d per week pension She wants some help towards the education of the children. Voted £20—M R C S Eng a widower aged 72, who practised at Stoke Newington and Ealing Suffers greatly from bronchitis and some time ago fractured his femur and has lost the use of his legs Only income £30 a year from investments Has two sons unable to help and lives with a married daughter whose husband is in the Army Voted £26 in 12 instalments—Widow aged 62, of M.B Edin who practised at Brighton and died in April 1917 at the age of 58, after a long illness which prevented him from saving Applicant's only income about £50 a year from investments. Has two daughters both living at home one a typist and the other a violinist, neither of whom is earning much One son married and is in the Army Relatives help to pay the rent Voted £11—L.R C P & S Glasg married aged 44 who practised at Brighton Is suffering from tuberculosis and is at present in a sanatorium Has had nine years illness and his savings are exhausted His wife has just commenced a business but is unable to help Voted £26 in 12 instalments—Daughters ages 58 and 60 of M D Aberd who practised at Luddenden and died in 1907 Both suffer from chronic deafness and ill health Only income £20 each from dividends Relieved four times £56 Voted £18 in 12 instalments.—Daughter aged 36 of M D Dub who practised at Hillingdon and British Guiana and died in 1824 Applicant suffers from tuberculous glands and is unable to work She lives with her stepmother who is badly off Relieved nine times, £100 Voted £10 in two instalments—Widow aged 60 of L.R.C P & S Glasg who practised at Walsall and died in 1902 Applicant was left totally unprovided for at husband's death with daughters to educate They are both earning a little now but not sufficient to enable them all to live without help Applicant earns a little by needlework. Relieved 11 times, £118. Voted £12 in 12 instalments—Daughter aged 67 of M R.C S Eng who practised at Liverpool and died in 1851 Applicant lost all her property in an Australian bank failure She has very bad health and is entirely dependent upon friends for support. Relieved four times £18. Voted £12 in 12 instalments—Widow aged 60 of M R C S Eng who practised at Bawtry and died in 1906. Applicant's health is very bad and she has undergone several operations Only certain income £22 from dividends Has one daughter who is at the Drapers Company School Brother helps with the rent. Relieved once £10 Voted £10 in two instalments—Widow aged 63 of L R C P & S Edin who practised at Blackpool and died in 1912. Applicant was left without means and tried to earn a living by keeping a boarding house but owing to ill health was compelled to give it up, and has the house on her hands until September Only income £30 a year from a friend Relieved once, £5 Voted £5.—Daughter aged 62, of M R C S Eng who practised at Kingscliffe and died in 1890. Applicant's income from dividends is £21 She earns £14 a year as a companion Health very unsatisfactory Relieved twice £14 Voted £9 in 12 instalments

—Daughter aged 55 of M R C S Eng who practised at Kingscliffe and died in 1690. Income from dividends is £21 and is earning at present at the rate of £16 a year as a companion but was out of employment for some time Relieved twice £14 (Sister to the previous applicant.) Voted £9 in 12 instalments —Daughter aged 70 of L.S A. Lond who practised at Christchurch and died in 1890. Applicant is an artist but owing to failing sight and age is unable to follow her profession Has life interest in a house but owing to its bad state of repair unable to let it Has recently sold a small cottage, but it only realised £100 net Friends allow her £25 per annum and the Artists Benevolent Fund have made her a grant this year of £15 Relieved once £18. Voted £18 in 12 instalments —Widow aged 65 of M D Glasg who practised at Pollokshields and died in 1903 Applicant has tried to make a living by taking in boarders but not successfully Has two small pensions from other charities Lives in own house which is heavily mortgaged, and which she cannot sell Relieved three times, £26 Voted £12 in 12 instalments —Widow aged 56, of M R.C S Eng who practised at Dover and died in 1916 Applicant left without means, with two children ages 17 and 15 and has to assist to support her mother-in law aged 87 The children are being educated by friends Applicant has now obtained a post as district nurse at £70 but finds this not sufficient Relieved once £10 Voted £10 —Daughter aged 63, of M D Edin who practised in London and died in 1659 Applicant has no private means, but earns about £12 a year by needlework Owing to age she cannot earn more Relieved nine times £61 Voted £12 in 12 instalments

Subscriptions may be sent to the acting Honorary Treasurer, Dr Samuel West, at 11, Chandos-street, Cavendish square, London, W 1

Literary Intelligence —Messrs Cassell and Co announce the forthcoming appearance of a sixth edition of "Diseases of the Skin," by Sir Malcolm Morris revised by the author, with the assistance of Dr Ernest Dore The chapters on syphilis have been expanded with a view to the needs of those who are carrying out the new official scheme for the diagnosis and treatment of venereal diseases

Proposed Amendment of the National Insurance Act —In reply to a recent question by Mr Sherwell in the House of Commons, Sir E Cornwall stated that a Bill had been prepared, after discussion with the Advisory Committee to the Insurance Commissioners dealing with the simplification of administration and with the adjustment of the finance of national health insurance on the lines of the recommendations contained in the reports of the Departmental Committee He hoped that the Bill might be regarded as non-controversial and in that event the Government hoped to submit it to Parliament with a view to its passage into law in the course of the autumn session

Colonel Charles Gordon Watson, C M G , F R C S , A M S , and Mr William Edward Audland L R C P Lond , M R C S Eng , have been promoted to Knights of Grace in the Order of the Hospital of St. John of Jerusalem in England

Obituary.

WILLIAM HENRY SYMONS, M D Brux , D P H

The death occurred on August 25th at the age of 63 of Dr W H Symons medical officer of health for the city of Bath Dr Symons trained first as a chemist, becoming analyst to a firm of aerated water manufacturers and acquiring a considerable practice as a consulting chemist He was appointed examiner in chemistry under the Pharmacy Act and held for a time the appointment of assistant demonstrator in materia medica at St Bartholomew's Hospital He then decided to qualify in medicine in order to take up public health work and entering as a student at St Bartholomew's Hospital he took the Conjoint Diploma in 1894 followed by the Public Health Diplomas at Oxford and Durham In 1896 he was elected medical officer of health of Bath in succession to the late Dr A B Brabazon, and during his 20 years' tenure of office he entered with the greatest enthusiasm into the work of the health department He was a pioneer in the campaign against the fly peril, and his work in connexion with child welfare bore good fruit He instituted a service of municipal midwives and just before his death organised a very successful Baby Week Exhibition

CHARLES WADE M R C S , L R C P ,

MEDICAL OFFICER OF HEALTH FOR THE BOSCASTLE DISTRICT

Mr C Wade died suddenly from syncope on August 7th, in his fifty third year The deceased who belonged to an old Cornish family succeeded to his late father's practice in Boscastle He was medical officer of health also medical officer and public vaccinator for the Boscastle district of the Camelford Union Mr Wade had practised in Boscastle for about 30 years where he was highly esteemed and took an active interest in all local matters connected with the improvement and welfare of his native town He will be greatly missed in the district and much sympathy is felt locally for his widow and daughter

JOHN BELL FISHER, M D Edin , D P H

The death occurred suddenly at Liverpool from heart failure of Dr J B Fisher, aged 60 years, who was for more than 30 years health officer to the Whitehaven rural district council, as well as to the Town and Harbour Trustees He was the son of a veterinary surgeon in Whitehaven and studied at Edinburgh University, where he took his degree in 1880 As a hygienist Dr Fisher was courteous and persistent in what he regarded as right, he was specially active in his attempts to improve housing conditions and latterly in the scheme for maternity and child welfare He was also school medical officer, and presided at several committees, among them the Border Counties Branch of the British Medical Association and the County Medical Committee under the Insurance Act Dr Fisher leaves a widow, a son, and a daughter

WILFRID JAMES HUSSEY PINNIGER, M D , B S Lond , M R C S , L R C P

Dr W J H Pinniger died at his residence in Clifton, Bristol, on August 4th, in his thirty fifth year, from pulmonary tuberculosis The deceased was the son of the late Mr T L Pinniger, of Beckhampton, Wilts He received his medical education at Bristol and also studied at King's College and University College, London He obtained scholarships at the Bristol Medical School, and was a gold medallist at University College, Bristol He held several resident appointments at the Bristol General Hospital, and was also formerly house surgeon at the Jessop Hospital for Women, Sheffield He leaves a widow and three children

CHARLES BAINBRIDGE RENDLE, M R C S , L S.A , J.P

Mr C B Rendle died recently at his residence in Kensington, in his eighty second year The deceased had formerly practised in Liskeard, where he was placed on the commission of the peace for the borough He later removed to Stoke, Plymouth and eventually to London He was the eldest brother of the late Dr E M Russel Rendle, of Plymouth, and his son, Dr A R Rendle, was formerly in practice in Stoke, and another son, Dr A B Rendle, at one time practised in Plymouth

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to The Lancet *Office directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

Cooke, E H M B B S Durh has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Hendon District of the county of Middlesex

Duncan A. H R L.R C P L.R C S I Certifying Surgeon under the Factory and Workshop Acts for the Omagh District of the county of Tyrone

McDowall, Colin M D Medical Superintendent of Ticehurst House Ticehurst, Sussex

Sai, P M B B.S Lond Medical Officer to Addenbrooke s Hospital Cambridge

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

Applecross Parish Council —Medical Officer and Public Vaccinator for the Torridon District Salary £250 per annum with house &c

Ayrshire Lower District of Colmonell Parish —Medical Officer Salary £70 per annum

Barnsley Beckett Hospital —Second Female House Surgeon Salary £200 per annum with board &c

Birkenhead Union Infirmary —Junior Female Resident Assistant Medical Officer Salary at rate of £300 per annum with board &c

Bolton Infirmary —Female Locum Tenens Assistant Surgeon

Bristol Royal Infirmary —House Physician and House Surgeon. Salary at rate of £120 per annum with board &c

Bromsgrove, Worcestershire Asylum —Temporary Assistant Medical Officer

Bury Infirmary —Junior House Surgeon. Salary £150 per annum with board &c

Cambridge, Addenbrooke s Hospital —House Physician Salary £150 per annum, with board &c.

Carlisle, Cumberland Infirmary —Female House Surgeon for six months Salary at rate of £250 per annum with board &c. Also Female House Physician for six months Salary at rate of £200 per annum with board &c

Coventry Education Committee —Temporary Assistant School Medical Officer Salary £350 per annum

Cumberland County of —Female Assistant Medical Officer Salary £350 per annum lation exceeding 4 000 000 persons, the death rate was 10·7, or 0 4 per 1000 above that recorded in the previous week among the remaining towns the death rates ranged from 3 2 in Ealing 5 0 in Cambridge and 5 5 in *Edmonton to 19 7 in Southend-on Sea* 20 3 in Huddersfield, and 21 1 in Dewsbury The principal epidemic diseases caused 338 deaths, which corresponded to an annual rate of 1 0 per 1000, and included 200 from infantile diarrhœa, 55 from measles 34 from whooping-cough, 28 from diphtheria, 11 from scarlet fever, 9 from enteric fever and 1 from small pox The deaths from diarrhœa, which had increased from 53 to 180 in the four preceding weeks further rose to 200, and included 60 in London 21 in Liverpool 11 in *West Ham and 9 each in Manchester* and *Leeds* The fatal case of small pox belonged to Smethwick The 627 cases of scarlet fever and 1062 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 6 and 9 below the numbers remaining at the end of the previous week. Of the 3412 deaths from all causes in the 96 towns 144 resulted from violence The causes of 37 deaths were uncertified, of which 4 were recorded in Stoke-on Trent in Birmingham and in Liverpool, and 3 in *Leicester but not one in London*

Scotch Towns —In the 16 largest Scotch towns, with an aggregate population estimated at 2,500 000 persons, the annual death rate was 11·7 against 10 8 and 11 2 per 1000 in the two preceding weeks The 269 deaths in Glasgow corresponded to an annual rate of 12 6 per 1000, and included 29 from infantile diarrhœa 8 from whooping cough 2 from measles and 1 from diphtheria The 88 deaths in Edinburgh were equal to a rate of 13 8 per 1000, and included 2 from diphtheria and 1 from whooping cough

Irish Towns —The 108 deaths in Dublin corresponded to an annual rate of 14 1 per 1000 and included 22 from infantile diarrhœa and 1 from diphtheria. The 85 deaths in Belfast were equal to a rate of 11 3 per 1000, and included 5 from infantile diarrhœa and 1 from *whooping-cough*

(Week ended August 25th, 1917)

English and Welsh Towns —In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17 000 000 persons, the annual rate of mortality was 10 6, against 10 3 10 4, and 10 5 per 1000 in the three preceding weeks In London, with a population exceeding 4,000 000 persons the death rate was 10 5 or 0·2 per 1000 less than in the previous week among the remaining towns the *death rates ranged from 3 8 in Wimbledon 4 5 in Eastbourne, and* 5 2 in Carlisle, to 16 9 in York 17 3 in Tynemouth, and 20·9 in Stockton on Tees The principal epidemic diseases caused 411 deaths which corresponded to an annual rate of 1 3 per 1000 and included 274 from infantile diarrhœa, 66 from measles 30 from whooping-cough, 27 from diphtheria, 10 from enteric fever and 4 from scarlet fever The deaths from diarrhœa, which had increased from 53 to 200 in the five preceding weeks further rose to 274 and included 72 in London, 40 in *Liverpool 22 in Manchester and 16 in Leeds The 614 cases of* scarlet fever and 1063 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 13 below and 1 above the numbers remaining at the end of the previous week *Of the 3463 deaths from* all causes in the 96 towns, 135 resulted from violence The causes of 23 deaths were uncertified and included 6 in Birmingham, 3 in Liverpool, and 2 each in Stoke-on Trent and Manchester

Scotch Towns —In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500 000 persons, the annual death rate was 10 3 against 11 2 and 11 7 per 1000 in the two preceding weeks The 245 deaths in Glasgow corresponded to an annual rate of 11 4 per 1000, and included 32 from infantile diarrhœa 9 from whooping cough, 5 from measles and 2 from diphtheria. The 46 deaths in Edinburgh were equal to a rate of 7 2 per 1000 and included 1 from scarlet fever

Irish Towns —The 149 deaths in Dublin corresponded to an annual rate of 19 5 or 4 4 per 1000 above that recorded in the previous week and included 38 from infantile diarrhœa and 1 each from enteric fever whooping cough, and diphtheria. The 87 deaths in Belfast were equal to a rate of 11 5 per 1000 and included 7 from infantile diarrhœa

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Irish Vital Statistics for 1916 —During 1916 *the marriage rate* in Ireland (5 45 marriages per 1000 of the population) was 0 44 per 1000 under that for 1915 and 0 11 under the average for the 10 years 1906–15 The birth rate (21 1 per 1000 of the population) was 0·9 per 1000 under the rate *for 1915 and 1 9 under* the average for the 10 years 1906–15, and is the lowest ever recorded in Ireland The death rate was 16 46 per 1000, being 1 10 under the rate for 1915 and 0 55 under the average for the 10 years 1906–15 With the exception of the rate for 1912, which was 16 45, and that for 1914 (16 28), the death rate is the lowest since 1871 Turning to tuberculosis, the death rate was for all forms of the disease 2 15 per 1000 With the exception of 1912 (in which the rate was also 2 15), 1913 (2 14), and 1914 (2·07), the rate for 1916 was the lowest recorded in Ireland, but there is little to boast of when we consider that in the same year in England and Wales the mortality rate from consumption in all its types was 1 53 per 1000 and in Scotland 1 59 The infantile mortality was in Ireland during 1916 83 per 1000 births, being 9 under the rate (that is, per 1000 births) for 1915, and also 9 under the average for the 10 years' period 1906–15 The rate, it is satisfac[illegible] is the lowest yet recorded The satisfact[illegible] the vital statistics for 1916 in Irelan[illegible] *To the Editor* rate generally the fall in the tuberc[illegible] leading article the slight improvement in the annual[illegible] is, but it is most extraordinary to find t[illegible] portance of all countries—there was during 1916 the low[illegible] when dise yet recorded, and that never were there so few[illegible] imports in Ireland as in 1916, notwithstanding that[illegible] anye ever remembers the country so prosperous, and[illegible], owing to the absence of compulsory service, so few m[illegible]—that is in comparison with England and Scotland—went to the war

Medical News.

Society of Apothecaries of London —At examinations held recently the following candidates passed in the subjects indicated

Surgery —J L. D Buxton (Sections I and II), University College *Hospital and S G Mahomed Liverpool*

Medicine —G S Ashby (Sections I and II) King's College Hospital J Beheanilian (Section I) and C G Bunn (Section I) Charing Cross Hospital E F Deacon (Section I), Guy's Hospital F C M Gabites (Sections I and II) Edinburgh, I Liberman (Sections I and II), Leeds; A G Curzon Miller (Section I.), Middlesex Hospital and L. Zarchi (Section I), Petrograd and Royal Free Hospital

Forensic Medicine —B A M Henderson, Manchester and Charing Cross Hospital I Liberman, Leeds and G L Mitchell, Glasgow and Birmingham

Midwifery —D A Dyer St. George's Hospital B A M Henderson, Manchester and Charing Cross Hospital I Liberman Leeds and J Stephen, Manchester

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery and midwifery: W *Fletcher Barrett St George's Hospital; C A W Chapman Sheffield D C Clark King's College Hospital* E W Diggett, *Jefferson* College, Philadelphia A Selby Green Middlesex Hospital; D E Hearn Durham E J G Sargent St. Bartholomew's Hospital *C Segal* Berne and Birmingham and ~~J R. Sharp London Hospital~~

Royal Medical Benevolent Fund —At the last meeting of the committee, held on August 14th, 29 cases were considered and £306 voted to 25 of the applicants The following is a summary of some of the cases relieved —

Widow aged 59, of L.R C.P Edin who practised at High Wycombe and Holt and died in June, 1917 and was an annuitant of the Fund Applicant's only income is £1 per week and owing to the long illness of her husband requiring constant nursing her health is undermined and she requires a change Voted £10 in two instalments —M D Lond aged 50, who practised in London and Perth, South Australia. Applicant has suffered from paralysis for the last ten years His wife is in a home and her income is only sufficient for herself and for the education of the two children ages 16 and 17 Applicant's income £50 a year which he finds insufficient owing to the increased cost of food Voted £26 in 12 instalments —Daughter aged 36 of M.R C S Eng who died in 1887 *Applicant has had to look after her mother, who has recently died,* and her income was only a life annuity so the daughter is left entirely without means and now wants help to be trained for secretarial work. Voted £10 —Children twins aged 5 years *of an M D Edin who died in 1916, and the mother* in 1914 There is also a boy aged 7 but the grandmother has adopted him Help is required towards the keep of the twins who are at present with an uncle who cannot afford to keep them Voted £12 in 12 instalments —*Widow aged 39 of M B Edin who practised* in South Africa and was killed in action in September 1916 He came over to England soon after the war commenced, hoping to be able to join the R A.M C or the Red Cross Society but had to wait so long that he joined a London Regiment as a private He left his wife and two children ages 8 and 9 in South Africa With the exception of what she can earn (at present is acting as temporary housekeeper), her only income is 18*s* 6*d* per week pension She wants some help towards the education of the children Voted *£20* —*M R C S Eng* a widower aged 72, who practised at Stoke Newington and Ealing Suffers greatly from bronchitis and some time ago fractured his femur, and has lost the use of his legs Only income *£30 a year from investments* Has two sons unable to help and lives with a married daughter whose husband is in the Army Voted £26 in 12 instalments —Widow aged 62, of M B Edin. who practised at Brighton and died in April, 1917, at the age of 58, after a long illness which prevented him from saving Applicant's only income about £50 a year from investments. Has two daughters, both living at home, one a *typist* and the other a *violinist* neither of whom is earning much. One son married, and is in the Army Relatives help to pay the rent Voted £11 —L.R C P & S Glasg married aged 44 who practised at Brighton Is suffering from tuberculosis and is at present in a sanatorium Has had nine years illness and his savings are exhausted *His wife has* just commenced a business, but is unable to help Voted £26 in 12 instalments — *Daughters ages 68 and 60, of M D Aberd* who practised at Luddenden *and died in 1907 Both suffer from* chronic deafness and ill health Only income £20 each from dividends Relieved four times *£56 Voted £18* in 12 instalments.—Daughter aged 36 of M D Dub. who practised at Hillingdon and British Guiana and died in 1884 Applicant suffers from tuberculous glands and is unable to work She lives with her stepmother *who is badly off Relieved nine times,* £100 Voted £10 in two instalments —Widow aged 60 of L.R C P & S Glasg who practised at *Walsall* and died in 1902 Applicant was left totally unprovided for at husband's death with daughters to educate They are both earning a little now but not sufficient to enable them all *to live without help* Applicant earns a little by needlework. Relieved 11 times £118. Voted £12 in 12 instalments —Daughter aged 67 of *M R.C S Eng* who practised at Liverpool and died in 1851 Applicant lost all her property in an Australian bank failure She has very bad health and is entirely dependent upon friends for support Relieved four times £18. Voted £12 in 12 instalments —Widow aged 60 of M R C S Eng who practised at Bawtry and died in 1906 Applicant's health is very bad and she has undergone several operations Only certain income *£22 from* dividends Has one daughter who is at the Drapers Company *School* Brother helps with the rent. Relieved once £10 Voted £10 in two instalments —Widow aged 53 *of L R C P & S Edin* who practised at *Blackpool and died in 1912* Applicant was left without means and tried to earn a living by keeping a boarding *house but owing* to ill health was compelled to give it up and has the house on her hands until September Only income £30 a year from a friend Relieved once £5 Voted £5.—Daughter aged 52, of *M R C S Eng* who practised at Kingscliffe and died in 1890 Applicant's income from *dividends is £21 She earns £14* a year as a companion Health very unsatisfactory Relieved twice, £14 Voted *£9 in 12 instalments*

—Daughter aged 55 of M R C S Eng who practised at Kingscliffe and died in 1890 Income from dividends is £21 and is earning at present at the rate of £16 a year as a companion but was out of employment for some time Relieved twice £14 (Sister to the previous applicant.) Voted £9 in 12 instalments —Daughter aged 70 of L.S A. Lond who practised at Christchurch and died in 1880 Applicant is an artist, but owing to failing sight and age is unable to follow her profession Has life interest in a house but owing to its bad state of repair unable to let it Has recently sold a small cottage but it only realised £100 net Friends allow her £25 per annum and the Artists Benevolent Fund have made her a grant this year of £15 Relieved once, £18 Voted £18 in 12 instalments —Widow aged 65 of M D Glasg who practised at Pollokshields and died in 1903 Applicant has tried to make a living by taking in boarders but not successfully Has two small pensions from other charities Lives in own house which is heavily mortgaged and which she cannot sell Relieved three times, £36 Voted £12 in 12 instalments —Widow aged 66, of M R C S Eng who practised at Dover and died in 1916 Applicant left without means, with two children ages 17 and 15 and has to assist to support her mother in law aged 87 The children are being educated by friends Applicant has now obtained a post as district nurse at £70 but finds this not sufficient. Relieved once £10 Voted £10 —Daughter aged 63, of M D Edin who practised in London and died in 1859 Applicant has no private means but earns about £12 a year by needlework Owing to age she cannot earn more Relieved nine times £61 Voted £12 in 12 instalments

Subscriptions may be sent to the acting Honorary Treasurer, Dr Samuel West, at 11, Chandos-street, Cavendish square, London, W 1

LITERARY INTELLIGENCE —Messrs Cassell and Co announce the forthcoming appearance of a sixth edition of "Diseases of the Skin," by Sir Malcolm Morris, revised by the author, with the assistance of Dr Ernest Dore The chapters on syphilis have been expanded with a view to the needs of those who are carrying out the new official scheme for the diagnosis and treatment of venereal diseases

PROPOSED AMENDMENT OF THE NATIONAL INSURANCE ACT —In reply to a recent question by Mr Sherwell in the House of Commons, Sir E Cornwall stated that a Bill had been prepared, after discussion with the Advisory Committee to the Insurance Commissioners dealing with the simplification of administration and with the adjustment of the finance of national health insurance on the lines of the recommendations contained in the reports of the Departmental Committee He hoped that the Bill might be regarded as non controversial, and in that event the Government hoped to submit it to Parliament with a view to its passage into law in the course of the autumn session

Colonel Charles Gordon Watson, C M.G , F R C S , A M S , and Mr William Edward Audland, L R C P Lond , M R C S Eng , have been promoted to Knights of Grace in the Order of the Hospital of St John of Jerusalem in England

Obituary.

WILLIAM HENRY SYMONS, M D BRUX., D P H

THE death occurred on August 25th, at the age of 63, of Dr W H Symons medical officer of health for the city of Bath Dr Symons trained first as a chemist, becoming analyst to a firm of aerated water manufacturers, and acquiring a considerable practice as a consulting chemist He was appointed examiner in chemistry under the Pharmacy Act and held for a time the appointment of assistant demonstrator in materia medica at St Bartholomew's Hospital He then decided to qualify in medicine in order to take up public health work, and entering as a student at St Bartholomew's Hospital he took the Conjoint Diploma in 1894, followed by the Public Health Diplomas at Oxford and Durham. In 1896 he was elected medical officer of health of Bath in succession to the late Dr A B Brabazon, and during his 20 years' tenure of office he entered with the greatest enthusiasm into the work of the health department He was a pioneer in the campaign against the fly peril, and his work in connexion with child welfare bore good fruit He instituted a service of municipal midwives and just before his death organised a very successful Baby Week Exhibition

CHARLES WADE M R C S , L.R C P ,

MEDICAL OFFICER OF HEALTH FOR THE BOSCASTLE DISTRICT

Mr C Wade died suddenly from syncope on August 7th, in his fifty third year The deceased who belonged to an old Cornish family, succeeded to his late father s practice in Boscastle He was medical officer of health also medical officer and public vaccinator for the Boscastle district of the Camelford Union Mr Wade had practised in Boscastle for about 30 years where he was highly esteemed, and took an active interest in all local matters connected with the improvement and welfare of his native town He will be greatly missed in the district and much sympathy is felt locally for his widow and daughter

JOHN BELL FISHER, M D EDIN , D P H

THE death occurred suddenly at Liverpool from heart failure of Dr J B Fisher, aged 60 years, who was for more than 30 years health officer to the Whitehaven rural district council, as well as to the Town and Harbour Trustees He was the son of a veterinary surgeon in Whitehaven and studied at Edinburgh University, where he took his degree in 1880 As a hygienist Dr Fisher was courteous and persistent in what he regarded as right, he was specially active in his attempts to improve housing conditions and latterly in the scheme for maternity and child welfare He was also school medical officer, and presided at several committees, among them the Border Counties Branch of the British Medical Association and the County Medical Committee under the Insurance Act Dr Fisher leaves a widow, a son, and a daughter

WILFRID JAMES HUSSEY PINNIGER, M D , B S LOND , M R C S , L R C P

Dr W J H Pinniger died at his residence in Clifton, Bristol, on August 4th, in his thirty fifth year, from pulmonary tuberculosis The deceased was the son of the late Mr T L Pinniger, of Beckhampton, Wilts He received his medical education at Bristol and also studied at King's College and University College, London He obtained scholarships at the Bristol Medical School, and was a gold medallist at University College, Bristol He held several resident appointments at the Bristol General Hospital, and was also formerly house surgeon at the Jessop Hospital for Women, Sheffield He leaves a widow and three children

CHARLES BAINBRIDGE RENDLE, M R C S , L S A , J P

Mr C B Rendle died recently at his residence in Kensington, in his eighty second year The deceased had formerly practised in Liskeard, where he was placed on the commission of the peace for the borough He later removed to Stoke, Plymouth, and eventually to London He was the eldest brother of the late Dr E M Russel Rendle, of Plymouth, and his son, Dr A R Rendle, was formerly in practice in Stoke, and another son, Dr A B Rendle, at one time practised in Plymouth

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

COOKE, E H , M B B S Durh has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Hendon District of the county of Middlesex

DUNCAN A. H R L.R C P , L.R.C S I Certifying Surgeon under the Factory and Workshop Acts for the Omagh District of the county of Tyrone

MCDOWALL, COLIN M D , Medical Superintendent of Ticehurst House Ticehurst, Sussex

SAI P M B B S Lond Medical Officer to Addenbrooke s Hospital Cambridge

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

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APPLECROSS PARISH COUNCIL.—Medical Officer and Public Vaccinator for the Torridon District Salary £250 per annum with house &c

AYRSHIRE LOWER DISTRICT OF COLMONELL PARISH —Medical Officer Salary £70 per annum

BARNSLEY BECKETT HOSPITAL.—Second Female House Surgeon Salary £200 per annum with board &c

BIRKENHEAD UNION INFIRMARY —Junior Female Resident Assistant Medical Officer Salary at rate of £300 per annum with board &c.

BOLTON INFIRMARY —Female Locum Tenens Assistant Surgeon

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum with board &c.

BROMSGROVE, WORCESTERSHIRE ASYLUM —Temporary Assistant Medical Officer

BURY INFIRMARY —Junior House Surgeon. Salary £150 per annum, with board, &c

CAMBRIDGE, ADDENBROOKE S HOSPITAL.—House Physician Salary £150 per annum with board &c

CARLISLE, CUMBERLAND INFIRMARY —Female House Surgeon for six months Salary at rate of £250 per annum with board, &c. Also Female House Physician for six months Salary at rate of £200 per annum with board, &c

COVENTRY EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer Salary £350 per annum

CUMBERLAND COUNTY OF —Female Assistant Medical Officer Salary £350 per annum

Dartford Kent, City of London Mental Hospital —Locum Tenens Medical Officer Salary 7 guineas per week with board, &c

Derby Derbyshire Royal Infirmary —House Surgeon. Salary £200 per annum with board &c

Eastbourne Eye Infirmary —Ophthalmic Surgeon.

Epsom Long Grove Asylum —Locum Tenens Medical Officer Salary 6 guineas a week, with board &c

Hull Victoria Hospital for Sick Children —House Surgeon

Manchester Ancoats Hospital.—Honorary Physician to the Skin Department Salary at rate of 3 guineas per clinic

Mansfield Borough of —Temporary Medical Officer of Health and School Medical Officer Salary at rate of £500 per annum

Northern Hospital Winchmore Hill, N —Temporary Assistant Medical Officer for Sanatorium Wards Salary 7 guineas per week with 30s allowance in lieu of emoluments

Portsmouth Royal Hospital —House Surgeon for six months Salary £250 per annum with board &c

Queen's Hospital for Children Hackney road Bethnal Green E — House Physician for six months Salary £100 per annum with board &c.

Rotherham Hospital —Junior House Surgeon. Salary £150 with board &c.

Royal London Ophthalmic Hospital (Moorfields Eye Hospital) City road E C —Third House Surgeon Salary at rate of £50 per annum with board &c

St Mark's Hospital for Cancer, Fistula and other Diseases of the Rectum, City road E C —House Surgeon Salary at rate of £250 per annum with board &c

Salford Royal Hospital —Junior House Surgeon for six months Salary at rate of £150 per annum with board &c.

Salisbury General Infirmary —House Surgeon Salary £150 per annum with board &c

Sheffield Royal Infirmary —Two House Surgeons Salary £120 per annum, with board &c

Staffordshire, Wolverhampton and Dudley Joint Committee for Tuberculosis —Resident Medical Officer for Moxley Sanatorium near Wednesbury Staffs, also to assist the Dispensary Medical Officers Salary £350 per annum, with board &c

Stockport Infirmary —Senior House Surgeon Salary £250 per annum, with board &c Also Junior House Surgeon Salary £200 per annum with board &c

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The Chief Inspector of Factories Home Office, London, S W, gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Radcliffe (Nottingham) Burton Latimer (Northampton) Pangbourne (Berks) and Whitehaven (Cumberland)

Births, Marriages, and Deaths.

BIRTHS

Back —On August 23rd at Queen Anne-street Cavendish square the wife of Ivor Back, F.R C S Captain R A.M C T of a son

Bainbridge.—On August 21st, at Tregantle Torquay the wife of Surgeon Charles Frederick Bainbridge, R.N of a daughter

Crichton Miller —At Bowden House Harrow-on the-Hill on August 27th the wife of H Crichton Miller M.D of 114a Harley street, of a daughter

Harold —On August 22nd at Brunswick-square W C the wife of James Harold L R C P I L.M of a son

Roderick —On August 22nd at Trumpington street, Cambridge the wife of Lieutenant-Colonel Henry Buckley Roderick, M C M.D, R A.M.C of twin sons

MARRIAGES

Bell—Ramsbotham —On August 27th at The Charterhouse, London John Henry Montgomerie Bell M D Edin F R.C S Edin Captain C A M C to Frances Jane daughter of the late S H Ramsbotham M D of Leeds

Grant—Minikin —On August 16th in Edinburgh Captain John Victor Livingstone Grant M.B, Ch B Edin. R A.M.C to Ida Mary daughter of the late Mr and Mrs Minikin of Horsforth

Murray—Beart —On August 23rd at St George's Hanover-square London James Elliot Murray M.D Edin of Shanghai China to Jocelyn Frances younger daughter of Montague Beart of Sawbridgeworth Herts (late of China and Japan)

Perrin—Preston —On August 22nd at the Parish Church Weybridge Maurice Nasmith Perrin B C Camb Captain R A M C to Susan Frances youngest daughter of Mr and Mrs Walter Preston of Curlew Hope Weybridge

Pracy—Power.—On August 24th at St Mary's Atherstone Captain Douglas Sherrin Pracy R A.M C M.R C S Eng L R.C P Lond. to Gwendoline Blanche elder daughter of Dr E T Power Atherstone

DEATHS

Ackroyd —On August 11th killed in action Captain Harold Ackroyd M.C R.A.M C

Armitage.—On July 30th whilst attending the wounded, Captain *Frank Rhodes Armitage*, M B D S O R F A aged 34

Bostock —On August 17th at Portman mansions W Surgeon Captain R Ashton Bostock Scots Guards of Penmaen Glamorgan

Metcalfe.—On August 24th at 1 Freeman-street Skelmersdale Lancs George Metcalfe M D M B B S, L R C P M.R C S, aged 54

Seward —On August 16th at Ashley House, Ryde I W, George Edwin Seward Retired Brigade Surgeon, Indian Army in his 91st year

Symons —On August 25th William Henry Symons M D Brux D P H Durh Major R.A M C T of Combe Park Bath aged 62

Taylor —On August 25th at Bexhill on Sea, Henry Young Cameron Taylor M B C.M F R C S Edin Captain R A.M C

Treherne.—On August 12th of wounds received in action Captain Claude William Treherne R A M C, aged 29

N.B —A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

Notes, Short Comments, and Answers to Correspondents.

THE CAUSATION OF SEX

To the Editor of The Lancet

Sir,—Although no one has, up to the present, settled the question when and where in the course of development of the embryo sex is determined, I think it illogical to attribute it merely to that stage when sexual differentiation takes place, and that therefore this factor may be safely eliminated from the field of investigation Sexual differentiation similar to that of any other part of the entire organism, occurs in due time, but the determination of sex is established at the moment of fertilisation of the ovum, when also the potential development of any other part of the whole is present in the fertilised cell The settlement of the sexes at this crucial point is, however, only the result of the condition of the spermatozoa and ova before fertilisation, and this condition appears to me to be the true cause of sex.

In previous publications I have stated the results of my observations in 1500 maternity cases, and I am now preparing new tables for further observations based on those results which I hope to publish in due course As I have stated before, my experience does not agree with any of the various views of previous observers, except perhaps that of Weill, mentioned by your correspondent Dr Leonard J Kidd in The Lancet of August 18th, but Weill does not define the activities of the spermatozoa or ova at the time of fertilisation I am, Sir, yours faithfully,

A P Murtz

Queen's-road, N, August 20th 1917

THE FACTORY GIRLS' COUNTRY HOLIDAY FUND

Mr Pett Ridge makes an earnest appeal for support in the annual report of the executive committee of this fund "Throughout the year girls and women whose health made a change and rest absolutely imperative have been sent away, and it is clear that under the stress of war holidays have been more needed than ever by the poorer class of worker The committee of the fund has been faced with great difficulty both in finding the necessary money and in selecting the women who need the holidays most At the present time the cost of a holiday is more than double the sum it was in normal years For this reason the committee's appeal for funds to supplement the amount the girls and women can pay has to be more urgent than ever Subscriptions and donations will be most thankfully received and acknowledged by Miss Canney, 75, Lamb's Conduit-street, London, W C 1

FIRST AID

A new and revised edition of the excellent little manual "Aid to the Injured and Sick," by Henry Willingham Gell, M B Oxon, published under the auspices of the National Health Society, 53, Berners-street, W, price *3d*, has just been issued Its purpose is to supply in the form of a text book, at a price within the means of the poorer members of the community the information necessary for assistance in emergencies till the doctor comes" To achieve this object much condensation has, of course, been necessary, but clearness has not thereby been sacrificed, and the fact that the little book has gone through 39 editions in 25 years is an indication of its popularity and usefulness The nine chapters into which the 40 pages of the book are divided deal with anatomy and physiology, wounds, hæmorrhages, fractures, dislocations and strains, bruises burns, stings and poisons, insensibility, drowning hanging, suffocation and electric shock, bandaging and the carriage of patients

PORTLAND CEMENT IN THE DRESSING OF WOUNDS

To the Editor of The Lancet

Sir —Having been in the habit of using small packets of Portland cement for many years for small household repairs, I have noticed its peculiar effects on the fingers if in its moistened state it is allowed to adhere to them for half an hour or so It blanches and shrivels the fingers, and bores pin holes in the tips especially, which tingle until ointment is applied The faculty of boring these pin holes particularly interested me, and I had often wondered what the effect would be if Portland cement were applied to a large wound Several years ago I have a recollection that I read a letter somewhere from a medical man I think who said he had used it in the treatment of wounds, whether plain or mixed with some other substance, possibly sugar, I cannot quite recall I have many times tried to find the letter again by means of indexes but have not discovered it I have also looked in books published upon the uses of concrete and Portland cement but have found no mention there of the use of Portland cement in wounds I have an impression that it was in THE LANCET that I saw the note but cannot be certain I have been thinking that perhaps the idea might again turn up in this war, but it has not up to now, so far as I know. Perhaps some of your readers may know of this scouring treatment of wounds.

I am, Sir, yours faithfully,
DOMESTICUS
London, August 24th. 1917

A SIMPLE METHOD OF DETECTING SIMULATED DEAFNESS

MEDICAL Boards not infrequently meet with men who state that they are "hard of hearing" in one or both ears, and in a number of these cases the examiner suspects malingering, or at least an exaggeration of their deafness Dr John J Eyre has written to us describing a method of detecting simulation which he has found of practical service as a member of the Shoreditch Medical Board and is not contained in the standard works on malingering. The usual tests, such as the watch and the tuning-fork, take time and are open to objection, as they depend upon the statement of the subject as to whether he can hear them or not It occurred to him that the involuntary blinking of the eye might be used as a test applied in the following way The recruit who stated that he was very hard of hearing, was first asked which ear was the deafer and then requested to close it with the index finger of the hand of the same side Standing on the opposite side, with his face 6–8 inches away from the ear, and after pretending to examine the ear for a few seconds, Dr Eyre then whispered suddenly "Shut your eyes." Before the recruit could take thought he closed his eyes and revealed the fact that he was a malingerer. Dr Eyre suggests that this method may also be employed as a rough-and-ready test for varying degrees of deafness the voice being gradually raised or the mouth brought nearer to the ear of the subject until the eye reflex is obtained

ESPERANTO AND THE WAR.

Mr Bernard Long, of 1, Cromwell road, Basingstoke, the author has sent us a pamphlet, *Esperanto and Why We Need It*, in which he makes out a good case for this auxiliary language Mr Long sets out the history of Esperanto and the uses to which it has been put socially and commercially and notes the support that it has received from Government departments and other important bodies throughout the world The adaptability of Esperanto to scientific use has led to the formation of an Esperanto group of medical men, the Tutmonda Esperantista Kuracista Asocio which up to the beginning of the war had its own journalistic organ *La Kuracisto* It is of interest to note that the study of the language has been the means of somewhat ameliorating the conditions of prisoners in internment camps, and in some cases, we are told, Flemish- and French-speaking Belgians are now for the first time able to converse together by means of Esperanto which they learned in the camp classes The pamphlet price 2*d*, can be obtained from the British Esperanto Association, 17, Hart street W C 1.

Medical Diary for the ensuing Week

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE West London Hospital, Hammersmith road W

MONDAY —2 P M. Medical and Surgical Clinics. X Rays Mr Gray Operations Mr B. Harman: Diseases of the Eye. Dr. Simson Diseases of Women.

TUESDAY —2 P M Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat. Nose and Ear Dr Perne : Diseases of the Skin.

WEDNESDAY —10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis Operations of the Throat, Nose and Ear. 2 P M., Medical and Surgical Clinics. X Rays. Mr Pardoe: Operations.

THURSDAY —2 P.M. Medical and Surgical Clinics. X Rays. Mr Gray: Operations. Mr B Harman Diseases of the Eye.

FRIDAY —10 A.M Dr Simson: Gynæcological Operations 2 P.M. Medical and Surgical Clinics X Rays Mr Baldwin Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Perne. Diseases of the Skin.

SATURDAY —10 A.M., Dr Saunders: Diseases of Children Dr. Banks Davis Operations of the Throat, Nose, and Ear. Mr B Harman: Eye Operations 2 P.M., Medical and Surgical Clinics X Rays. Mr Pardoe: Operations

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The following journals, magazines, &c., have been received — British Journal of Ophthalmology, Journal of State Medicine, American Medicine, Pacific Medical Journal, Journal of Nervous and Mental Diseases, American Journal of Orthopedic Surgery, [illegible] Review, Pediatrics, Cleveland Medical Journal, Military Surgeon, [illegible] Medicine, Therapeutic Gazette

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Letters whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor"

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager"

We cannot undertake to return MSS not used.

Offices 423, STRAND, LONDON W C. 2.

MANAGER'S NOTICES

VOLUMES AND CASES

VOLUMES for the first half of the year 1917 are now ready Bound in cloth, gilt lettered, price 21*s*., carriage extra

Cases for binding the half year's numbers (inland edition) are also ready Cloth, gilt lettered, price 2*s* 6*d*, by post 2*s* 10*d*

To be obtained on application to the Manager, accompanied by remittance

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423 Strand, London, W C. 2, are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect

THE COLONIAL AND FOREIGN EDITION is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose The Publisher of THE LANCET has obtained the required permission and he will forward copies direct from the Office to any neutral country on receipt of instructions

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a.m. by Steward's Instruments*)

THE LANCET Office August 29th, 1917

Date.	Rainfall	Solar Radio in Vacuo	Maximum Temp Shade	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks.
Aug 23	—	113	72	58	63	65	Cloudy
" 24	0·05	111	65	57	55	63	Cloudy
" 25		115	70	55	54	62	Fine
" 26	—	112	63	[illegible]	56	62	Cloudy
" 27	0·22	100	62	[illegible]	[illegible]	[illegible]	Cloudy
" 28	[illegible]	81	61	55	57	60	Cloudy
" 29	0·10	85	62	54	55	58	Overcast

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

BOOKS, ETC , RECEIVED

BALE, JOHN SONS, AND DANIELSSON London
Clinical Surgical Diagnosis for Students and Practitioners By F de Quervain. Second English edition translated by J Snowman M D 35s net

CHURCHILL, J AND A. London
Massage Its Principles and Practice By James B Mennell M A, M D B C Cantab With an Introduction by Sir Robert Jones C B Colonel R A M C
Pathology General and Special for Students of Medicine By R Tanner Hewlett, M D F R C P, D P H Fourth edition 12s 6d net

KIMPTON, HENRY London
Operative Surgery of the Nose Throat and Ear By H W Loeb and Others Vol XI (in two volumes) Price £3

LEWIS H K London
Electro-Therapeutics for Military Hospitals By Wilfrid Garton M R C S L R C P Temp Capt R A M C 2s 6d net
The Indian Operation of Couching for Cataract incorporating the Hunterian Lectures 1917 By Robert Henry Elliott Lieut Col, I M S (ret) 7s 6d net
Hygiene and Public Health By Louis C Parker Lieut Col R A M C (Temp) and H R Kenwood, Lieut Col, R A M C (Temp) Sixth edition 14s net

LONGMANS GREEN AND Co , London
One Hundred and One Practical Non Flesh Recipes By Margaret Blatch M C A Third edition 1s 6d, net
The Public School System in Relation to the Coming Conflict for National Supremacy By V Seymour Bryant M A With a Preface by Lord Rayleigh 1s 6d net

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SOME
Statistical Results
OF THE
TREATMENT OF CHEST WOUNDS

BY T R ELLIOTT, F R C P LOND, F R S,
LIEUTENANT COLONEL, R A M C.

THE figures analysed in the first part of this paper are based upon the after histories in the United Kingdom of 170 cases of chest wound which, when seen by the writer at a base hospital in France during the first two years of the war presented various points of clinical interest and were therefore made the object of later inquiry The figures are incomplete, because they omit not only those that died at the base hospital, but also a large number of uneventful cases whose later history was not ascertained They do not in any way represent the proportionate incidence of the various complications of a chest wound but they are sufficiently comprehensive to be used for answering some of the main questions with regard to the convalescence of survivors from chest wounds Fuller and more detailed information upon the various points in the after history of such wounds will not be available for the guidance of surgeons in the field until workers in England publish the fruits of their more careful inquiries in home hospitals

For the returns that are here reviewed, the writer is indebted to the courtesy of many medical officers at home who have generously supplied the information asked for in the schedules issued by the Medical Research Committee This information, in respect of many of the cases, unfortunately ends at the date in the clinical history when the patient was discharged from hospital, and a statement of "fit for duty" may mean no more than that the convalescent was classified as such by the estimate of the medical board A statement of "fair result" indicates that convalescence had passed beyond all the lingering steps where a set-back might be apprehended, but that it had not yet ended in discharge from hospital The majority of such cases might be looked upon as probably fit for duty in a little longer time, and indeed, it will be observed in the subsequent tables of data that most of these returns of "fair result" were made in the second or third month after the wound—that is, at a date when it was naturally too early to expect that the case would have been finally disposed of

Dr Matthew Young, of the Statistical Department of the Medical Research Committee, gave most valuable assistance at this point, and traced 75 out of the total 170 beyond hospital to the duty which they were actually found to be capable of performing in the Army, or to their final discharge as unfit For the rest of the cases Army records were not completely available at the time when this paper was written, and more time must elapse before these ultimate data can be collected

An impression has been gaining ground, in the French service at any rate that chest wounds are more fatal than was at first supposed Whatever their mortality may be, it is certain that the deaths almost all occur in the first month, and that beyond this date the injury is neither of a fatal nor of a disabling character A chest wound may invalid a soldier for two or three months if it is simple or for any time up to a year if it has been accompanied by a large or by an infected effusion into the pleural cavity But the ultimate recovery is very good and relatively few of the survivors from such wounds need to be invalided out of the Army

The periods of invalidism may be considered with reference to the occurrence of a sterile hæmothorax whether aspirated or otherwise, of empyema of pneumothorax and of lung laceration And each of these groups will require further analysis in respect of the nature of the original wound, as to whether it was caused by rifle bullet or by shell and whether the projectile was or was not retained in the body The clinical groupings rest upon an examination of each case made in France during the first and second week after the wound at a time that is when the immediate results of the injury could be easily and completely identified Owing to pressure of general work it was often impossible to ask for an accurate localisation of such projectiles as were retained in the thorax, and the statement of a foreign body being retained refers only to retention anywhere within the thorax in a position where it lay too deep to be felt by the fingers

The patients were transferred to England in the third week after the wound, or a week or two later if an empyema had been drained by rib resection The returns from home hospitals show that after this time it was very rare for any further intervention to be found necessary There was never any fresh effusion that required aspiration Sepsis developed in only three of the cases that were supposed to be sterile when they left France, and these were all examples of solidly clotted hæmothorax with retained projectiles Necrosing fragments of rib had to be removed in a few cases, and there were two minor Estländer operations on old empyemata Retained foreign bodies were rarely interfered with, and there was no history of their having led later to any characteristic troubles There were no deaths in the United Kingdom, excepting a single case where an operation undertaken at the patient's request for the removal of a bullet was followed by a fatal pneumonia

The number of cases, totalling 170, whose after-history in the United Kingdom was traced consisted of the following groups —

Sterile hæmothorax	89
Septic effusion	64
Clotted hæmothorax, later septic	3
Sterile pneumothorax	6
Severe laceration of lung	2
No effusion	6

LACERATION OF THE LUNG

It is difficult to select cases which will illustrate the recovery of a lacerated wound in lung tissue, because this condition is usually associated with the development of complicating factors, such as a hæmothorax.

An outstanding example may be quoted The man was wounded by a bullet through the upper right chest The entrance and exit wounds were large, offensive pus poured freely from both of them, and the track communicated with the bronchus X rays showed a large tunnel blown clean through the lung, giving the appearance of a tuberculous cavity The lung was everywhere in contact with the parietal pleura After a period of dangerous sepsis the patient recovered rapidly, and in four and a half months he was back on duty in France A similar case caused by a shrapnel ball had also healed soundly in five months,

Two examples of septic hæmothorax (anaerobe bacilli with streptococci), which were coughing up foul hæmothorax fluid in great abundance recovered so rapidly after rib resection that they had rejoined for duty three and four months respectively after their wounds Yet in these the lung must have been freely lacerated Indeed, most lung wounds in this war are accompanied by laceration of greater or less degree, and yet the after history of the hæmothorax cases in general fails to afford any indication that lung laceration needs to be reckoned with as a factor delaying convalescence

The general conclusion to be drawn from this evidence is that laceration of the lung tissues is as readily repaired as it is easily inflicted Insomuch as it is a vascular sponge, the lung is very tolerant of such injury, and scar tissue quickly closes up the defect Pneumonic inflammation, or gangrene does not spread from the neighbourhood of the track, and even if the latter be septic, extending ulceration and secondary hæmorrhage are rarely to be feared provided that the wound in the lung be given free outward drainage The influence of a foreign body retained in lung tissue is considered in a later section

PNEUMOTHORAX

A pure exogenous pneumothorax, in which air has escaped freely into the pleural cavity and yet the leak has [illegible] accompanied by intrapleural hæmorrhage, is relatively rare, though not so uncommon as might have been expected from the fact that most of the wounds causing this condition have passed through the hilum of the lung

Six cases appear in this group, of which three were examples of full pneumothorax with complete collapse of the lung, while in the other three the lung was only half collapsed, though it was everywhere separated by free air from the parietal pleura There was neither free blood nor serous effusion in the pleural cavity The clinical diagnosis was in each case confirmed by the X rays In only one of the six did it appear probable that the air had entered through the wound in the thoracic wall

Only three of the cases were aspirated, with partial replacement of the air by oxygen on the thirteenth, nineteenth, and twentieth days respectively Two others had a shrapnel ball and a shell fragment respectively retained in the chest, and these were not interfered with

The result was that within two months of the wound all of the cases were free from any evidence of chest trouble, and three had already been discharged as fit for duty The cases that were not aspirated had attained ultimate convalescence as rapidly as those which were aspirated The latter treatment is therefore unnecessary, though it may be used in the second week to lessen discomfort and dyspnœa if the patient complains of the latter Such aspiration has never in my experience led to any ill consequences

From these results it is evident that a simple traumatic pneumothorax is a very benign condition It is not likely to be followed by the later development of sepsis nor of a serous effusion The diaphragm soon commences to move again on the injured side There are none of the crippling restrictions to respiratory movements that usually persist with a lung that has collapsed beneath clotting blood, and expansion follows absorption of the air so rapidly that such casualties become fit for duty at fully as early a date as do others with simple through and through wounds of the lungs which were not complicated either by air leak or by internal hæmorrhage

STERILE HÆMOTHORAX.

The evidence with regard to this group is incomplete in two respects Since the smaller collections of fluid were looked upon as being of little interest, no attempt, as a rule, was made to trace their subsequent history, and therefore few of them appear in the table Also, the largest effusions in this series were almost without exception emptied by aspiration in France, so that it is, unfortunately, impossible for me to quote cases from my own experience which would illustrate the after history of a large non aspirated hæmothorax in contrast with that of a similar condition treated by relatively early aspiration

STERILE HÆMOTHORAX ASPIRATED

The aspiration was generally performed on some day from the sixth to the twelfth after the wound, and oxygen replacement was used so as to enable the fluid to be removed as completely as possible at a single operation Probably this was effected with fair success, and little was left behind except a collection of blood clot which varied in amount from case to case in correspondence with the individual conditions of clotting in each

A second aspiration was very rarely needed in France, and it never produced more than 10 oz of fluid in any case Only two of the cases were aspirated again in England, and one of them yielded only 2½ oz (after 63 oz. in France), and the other 12 oz (after 70 oz. in France) Therefore it appears to be certain that a fresh accumulation of fluid, whether of blood or of pleural effusion, does not develop to any appreciable extent in sterile cases after the first complete aspiration

The subsequent histories in England were obtained for a total of 67 aspirated cases The details are given in the following tables The statement that a man was sent to "furlough," or showed a "fair result" within three months, gives a strong probability that he would shortly be fit for duty, but in these cases the after history could not be traced further The figures in brackets for every group give the total numbers of months of invalidism for each patient before he was returned as fit for duty or otherwise reported upon Thus 3 (4, 4, *6*) indicates that the 3 patients were marked for duty at the 4th, 4th, and 6th month respectively after their wounds A figure in *italic* indicates that in this case the projectile was retained—for example, the case discharged at the sixth month in the instance just quoted

Aspiration never caused any trouble or evidence of recurrent hæmorrhage, and not a single one of the cases so treated developed infection later in England. In some cases it was [illegible] by most satisfactory results, so that several cases of [illegible] effusion were thereby got back to duty at almost as [illegible]rly a date as a man with no hæmothorax at all

Thus one case, 60 oz removed at one aspiration (shell retained), was back on duty in France 2½ months after his wound, and another of 64 oz was on light duty at the end of one month One officer, from whom 62 oz. had been removed, was met by me six months later in France, and he stated that his wind was as good as it had ever been in his life

But despite these favourable cases, it will be evident from the tables that examples of large hæmothorax, on the whole, took longer to get back to duty than did the smaller effusions, and that the time of invalidism was progressively less prolonged in proportion as the original effusion was of smaller size

The time of return to duty varied widely in the limits of each of the three groups This difference may have been due to varying amounts of residual blood clot, or to different standards of treatment by physical exercise at the various home hospitals at which they were received The character of the wound in the thoracic wall would also affect the individual result It should be noted that the retention of a foreign body did not seem to influence the time of return to duty

There did not appear to be any clear difference in times of invalidism between those who were aspirated in the second and those in the third week after the wound Certain cases that had been aspirated by Captain S R Armstrong, R A M C, at an earlier date, on the third or fourth day, and came under my observation subsequently, seemed from their physical signs to be likely to give better results than those quoted in the following returns But in these cases the complete history is lacking, so there is no actual proof of the probable advantage of a very early aspiration

TABLE I —*Sterile Hæmothorax Aspirated (Total 67 Cases)*

Large hæmothorax 60 to 90 oz. of fluid (1700 c.c. to 2500 c c) removed at a single aspiration

30 cases: 18 caused by bullet, 2 being retained
12 „ shell, 7 „

—	In 3 months or less	After 3 months	Total.
To duty	6 (1, 2, 2½, 2½, 3, 3)	11 (4 *5* 6, 6, 7 7 8, 8 *9 11 15*, the last 4 being in France at that time)	17
To furlough	3 (1 2, 2)	—	3
Fair result	9 (1, 1¼ *1¼* 1½ 1¾ 2¼, 2½ *2¾ 3*)	—	9
Unfit	—	1 (owing to paralysis of arm)	1

Medium-sized hæmothorax yielding from 35 to 60 oz. of fluid at a single aspiration

24 cases: 19 caused by bullet, *5* being retained
5 shell 1

—	In 3 months or less	After 3 months	Total
To duty	6 (1¼ *2 2½* 2½ 2½ 3)	*5 (4 4 5 5, 5)*	11
To furlough	3 (1¼ 1½ 2)	—	3
Fair result	8 (1 1¼ 1½ 1½ 1¼ *1½* 1¾ *2¼*)	—	8
Unfit	1 (succumbed to operation *1½*)	1 (*5* by traumatic neurasthenia)	2

Small hæmothorax yielding 20 to 30 oz. with a varying amount of residual clot.

13 cases 11 caused by bullet, 3 being retained
2 „ shell 1

—	In 3 months or less	After 3 months	Total.
To duty	5 (2, 2½ 3, 3 *3*)	3 (4, 4, 6) (all in France)	8
To furlough	1 (3)	—	1
Fair result	2 (1, 1½)	—	2
Unfit	—	2 (*7* from traumatic neurasthenia; *8* from paralysed arm)	2

LARGE *CLOTTED HÆMOTHORAX*

Three examples of this condition were traced In each of these aspiration had been attempted by me in France with a yield of only 10 to 20 oz., where at least 50 oz had been looked for The physical signs remained without change, and the patients were evacuated to England in the belief that the massive residuum of blood clot was sterile

All three were subsequently resected in home hospitals In each of them the projectile, one bullet and two shell, had been retained The results were —

2, shell retained, both resected for empyema (organism not stated), one discharged to duty in four months from wound, and one practically well at that time

1 bullet retained, resected and drained for "blood clot", discharged unfit at seventh month

It is paradoxically true that recovery of the chest from the crippling results of a large hæmothorax may be more rapid if sepsis occur than if the collection remains sterile, for the digestive processes of infection are able to discharge with great rapidity through a drainage opening the fibrinous masses of blood clot that otherwise might have continued to resist the expansion of the lung in its lower half

STERILE HÆMOTHORAX, NOT ASPIRATED

None of the 22 cases of hæmothorax which were not aspirated developed any further complications at home, and the small effusions were discharged for duty at about the third month The results were fully as good as those of any aspirated cases (Table II)

TABLE II —*Sterile Hæmothorax, not Aspirated (Total 22 Cases)*

Moderately small hæmothorax estimated at 20 to 40 oz with dullness extending well into the axilla.

11 cases 5 caused by bullet, 1 being retained.
6 „ shell 4 „ „

The retention of a shell fragment did not appear to influence the date of return to duty

—	3 months or less	After 3 months	Total
To duty	7 (1¼ 2 2, 2 2½ 3 3)	3 (*6* 6 7 One at 6 being a double hæmothorax One in France at *11*)	10
To furlough	1 (*5*)	—	1

Small hæmothorax not reaching into axilla
11 cases 9 caused by bullet 2 being retained
2 shell 2 „

—	3 months or less	After 3 months	Total
To duty	7 (1¼ 1½ *1¾* 2, 2, 2 *3*)	3 (*5* *6* 8 Two in France at eighth month)	10
Fair result	1	—	1

No hæmothorax The only uncomplicated cases were the two returned as "for duty and fair result" at three weeks the rest cannot be justly quoted in comparison

6 cases 3 caused by bullet, 2 being retained.
3 shell 1 „

—	3 months or less	After 3 months	Total
To duty	2 (*¾* *½)	1 (*5*)	3
Fair result	3 (1 *1¾* 2)	—	3

Therefore it is not necessary to aspirate small effusions of about 30 oz which extend half way into the axilla and do not cause much cardiac displacement Indeed the combined Tables III and IV of total results show a much more satisfactory recovery for the non aspirated than for the aspirated cases of hæmothorax, and might be quoted in respect of a routine policy of non interference But the comparison is unfair on account of the small size of the non aspirated effusions The large effusions that were aspirated gave tolerably good results At least 30 per cent of them were well again within three months So rapid a recovery could not have been attained without aspiration Medical officers in England have described the late results of a large non aspirated hæmothorax as being most unsatisfactory the lung remaining collapsed and the chest expanding very poorly My tables fail to bring out this type in contrast to the others because all the cases of large hæmothorax in this series were aspirated

Tables III and IV summarise the general results, and show that the recovery of a case of sterile hæmothorax was not influenced by the retention of a projectile

TABLE III —*Sterile Hæmothorax Aspirated Completely*

—	Bullet		Shell		Total.
	Out	Retained	Out	Retained	
Duty 3 months or less	11	2	2	2	17
After 3 months	8	2	4	5	19
Total for duty	19A	4	6	7	36
Fair result (not finally classified)	18	3	2	3	26
Unfit	2B	3C	—	—	5
Total	39	10	8	10	67

A All returned to duty in less than six months
B Both invalided owing to paralysis of arm
C Two invalided by traumatic neurasthenia and one died at fifth week after operation in the United Kingdom for removal of the bullet
7 cases were traced back to full duty in France

TABLE IV —*Sterile Hæmothorax Not Aspirated Small Size*

—	Bullet		Shell		Total
	Out	Retained	Out.	Retained	
Duty 3 months or less	8	1	2	3	14
After 3 months	2	2	—	2	6
Total for duty	10	3	2	5	20
Fair result (not-finally classified)	1	—	—	1	2
Unfit	—	—	—	—	—
Total	11	3	2	6	22

SEPTIC HÆMOTHORAX (64 CASES)

The original volume of blood in these varied greatly, and in a few there was probably no hæmothorax, but simply an infected pleural effusion The grouping of the cases is made according to the chief forms of infecting organisms. Actually this distinction has little value with regard to the total time of invalidism of a case after drainage It is true that the nature of the infecting organism is all important in a consideration of the mortality from the various forms of septic hæmothorax in the first two weeks But when once the danger to life has been averted by a satisfactory drainage of the pleural cavity all the infections soon assume a common character, and the mingled secondary growths on the suppurating pleura are probably much the same in all open empyemata

The period of convalescence will thenceforward be determined by the size of the cavity and by the nature of the collapse of the lung and the thickness of the fibrin coat overlying it The time must also vary considerably in relation to the skill and energy with which the empyema cavity was treated in the various hospitals in the United Kingdom where each patient was received, for it is certain that systematic breathing exercises combined with antiseptic lavage of the cavity will hasten the closure of the sinus Much depends, too on a proper placing of the original drainage opening and a satisfactory removal of carious ribs For these separate reasons the final figures must be considered only on a very broad average of the results that they show

The tables which follow are constructed upon a plan similar to that used for sterile hæmothorax, and retention of a projectile is indicated in the same way by a figure in *italic* An empyema of large size (estimated above 50 oz) is indicated by an asterisk to the figure of time of recovery for each individual case

The general times of recovery are fairly illustrated by the following case The patient was wounded in the right chest in 1915 and a sterile hæmothorax was aspirated In six months he was back on full duty in France and felt no disability In 1916 he was again wounded, this time in the left chest, and a large hæmothorax resulted which on [illegible] first aspiration yielded 80 oz freely infected with staphylococci After rib resection he was dangerously ill and semi delirious for a week, but in 2½ months the sinus was closed, and in six months he was again reported fit for duty in England.

EMPYEMATA

TABLE V —*Infections by Gas producing Anaerobic Bacilli only*

23 cases 6 caused by bullet 1 being retained
17 , shell 7 , ,

There was no obvious difference between early and late resections in respect of return to duty One patient, though infected, was treated by aspiration only in France, but he had to be resected in the United Kingdom, and was discharged unfit at the end of the fifth month It is difficult to estimate the influence of the size of the collection of fluid, because the ultimate pyo pneumothorax may be large when the original hæmothorax was small The retention of a shell fragment certainly had an unfavourable influence on return to duty

—	In 6 months or less	After 6 months	Total
Duty	8 (3*, 3*, 3, 3½ 4*, 5 5)	2 (12* 18)	10
Fair result (sinus closed)	4 (2½ 3*, 3*, 4*)	1 (7*)	5
Unfit	4 (4* 5* 6* 6*)	4 (4* from duty at 6*) 7 8* 12*)	8

TABLE VI —*Infections by Gas Bacilli Combined with Streptococci, &c*

9 cases 3 caused by bullet 0 being retained
6 , shell 3 , ,

These were chiefly resected in the second or third week

—	In 6 months or less	After 6 months	Total
Duty	1 (4)	3 (7 8* 8 of whom 2 in France at 11 and 12)	4
Fair result (sinus closed)	3 (2 3, 5)	—	3
Unfit	1 (6*)	1 (at 15 after light duty at 7	2

TABLE VII —*Infections by Streptococci and Staphylococci either Alone or Commingled*

These groups are thrown into a common table The separate results were —

Streptococci alone	7 cases :	2 fit for duty	4 unfit
Staphylococci alone	4 ,	2 , ,	2 ,
Strept. and staph mixed	5 ,	3 ,	2

There were two cases, afterwards classed as unfit, upon whom minor Estländer operations were performed

Total cases, 16 10 caused by bullet, 0 being retained
6 , shell, 3 , ,,

—	In 6 months or less	After 6 months	Total
Duty	6 (4½ 5*, 5 5½ 6*, 6*)	1 (10*)	7
Fair result (sinus closed)	—	1 (8)	1
Unfit	2 (4½* 5*)	6 (7, 9 9* 12 14 from Reserve Batt'n at 6 10 from light duty at 8)	8

TABLE VIII —*Infections by Pneumococci (8) and Influenza Bacilli (2)*

10 cases : 5 caused by bullet, 0 being retained
5 , shell 2

All the cases with large collections returned to duty one being back in France in the fifth month Late resections were fully as satisfactory as early ones

—	In 6 months or less	After 6 months	Total
Duty	2 (5* 5)	4 (7* 9 10 12* when in France)	6
Fair result (sinus closed)	2 (2½ 4)	1 (7 invalided by rheumatic fever)	3
Unfit	—	1 (7)	1

TABLE IX.—*Various Infections*

B coli, 2, Diphtheroid bacilli, 2, *B mycoides*, 1, a spirillum, 1 The case of *B mycoides* and one of the diphtheroid were resected later in the United Kingdom after the infection had been treated in France by aspiration only in the hope that it might subside

6 cases : 2 caused by bullet, 1 being retained
4 , shell, 3 , ,

—	In 6 months or less.	After 6 months	Total
Duty	1 (4*)	1 (8*)	2
Fair result (sinus closed)	3 (3, 4 4*)	—	3
Unfit	1 (6*)	—	1

The after results of the different infections are all combined in the next Table, No X The sinus had closed by the third or fourth month in a large proportion of the cases, and nearly one third were fit for duty in six months or less In the whole series there were only two cases in which a minor Estländer operation was performed in England None died But at least one third of the empyema cases had ultimately to be discharged as unfit simply on account of the chest condition, whereas there were none such in the sterile hæmothorax group

The original size of the empyema did not affect the ultimate classification of the convalescent as much as might have been expected About one half (31) of the 64 empyemata had been of large size—that is, roughly 50 oz or more, and about one half of the unfit and one half of those fit for duty were found to have belonged to the group of large empyemata. The large sterile hæmothorax got back to duty equally soon, whether caused by bullet or shell, and whether the projectile was or was not retained But a retained foreign body in the septic cases did cause unfitness Thus in the latter group —

For 44 projectiles not retained there were 9 unfit = 20%
, 20 , retained ,, 11 ,, = 55%

TABLE X —*Total Results of Empyemata (64 Cases)*

—	Bullet		Shell		Total
	Out.	Retained	Out	Retained	
Duty 6 months or less	9	—	6	3	18
After 6 months	4	1	4	2	11
Total for duty ..	13	1	10	5	29
Fair result (not finally classified)	4	—	8	3	15
Unfit..	6	1	3	10	20
Total	23	2	21	18	64

4 of those marked unfit were found to be so after several months of light duty, and 3 of these had retained shell fragments 7 cases were traced back to full duty in France within a year of their wounds, and 2 of these had had large empyemata

THE MORTALITY AMONG CHEST WOUNDS IN FRANCE

The figures that have been given in the preceding tables may be taken as a fair index of what is the after history of chest wounds that have survived to be sent across the Channel under the present established methods of treatment

During the last nine months, however, the opinion has been gaining ground that better results might be obtained by more active surgery undertaken as soon as possible after the wound was inflicted French surgeons have felt this strongly, and in order to accumulate such evidence as was needed for arriving at a decision on the matter the subject was formally inscribed on the order of the day of the French Society of Surgery on Nov 29th, 1916 Since that date numerous papers and important series of statistics bearing on the question have appeared in the weekly *Bulletins de la Société de Chirurgie de Paris** It is argued in these papers that the mortality from chest wounds is much higher than was at first supposed, and that this high mortality requires vigorous efforts on the part of surgeons to save life Also, in respect of casualties who *survive* these wounds, evidence is brought forward to show that retained projectiles and especially shell fragments, almost always cause trouble, either by the introduction of sepsis, *or*, if sterile, by the introduction of later pathological changes or symptoms that incapacitate the patient for service.

In consequence of these views it has been urged by several surgeons that the routine treatment of chest wounds should include —

1 The operative closure during the first 24 hours of all chest wounds that remain open with air suction (traumatopnœa) or free bleeding from within This surgery should be accompanied by a careful cleansing and closing of any wound in the lung as well as of the pleural cavity if any blood has been effused into the latter Drainage at an early date is to be avoided

2 The removal of all shell fragments, other than those of small size which are proved to be retained within the chest This should be done also in the first 24 hours and should be accompanied by a similar cleansing of the wound track, by suture of lacerated lung, and evacuation of the blood clot from the pleural cavity with subsequent closure of the incision in the thoracic wall in the hope that the development of sepsis will be thereby prevented

3 The removal from the thorax of all other retained foreign bodies at a much later date when the possibility of septic complications has passed away Duval's method of open operation and that of Petit de la Villeon (Jan 10th, 1917) have been freely used for this purpose and with complete success

Treatment on these lines would aim at saving lives that might be lost from primary hæmorrhage or from fulminating sepsis, and at lessening the periods of invalidism that result from the development of an empyema or from residual blood clot, and perhaps, too from retained projectiles in the chest

It has been fully demonstrated by such French surgeons as Pierre Duval, and independently by several surgeons in our medical service of whom Gask and Gray have been the pioneers that these thoracic operations are quite practicable under military conditions in the field. This in itself is a most important advance for it shows that the pleural cavity may be freely opened under ordinary local or general anæsthetics and the lung manipulated without any fear of immediate physiological disturbances Only it is essential that infection shall neither be spread broadcast by the operation nor introduced by drainage of the pleural cavity a the end of the operation. The procedure demands skill in execution as well as judgment in the choice of the case, and the results though often strikingly successful, are not always favourable For this reason it is desirable to test by general statistics the results of treatment by the earlier conservative policy and to see in what group of chest wounds it is reasonable to anticipate any improvement

Deaths after chest wounds are caused either by primary hæmorrhage or by infection in the chest or they may follow upon complicating wounds and in particular those of the abdomen or spine All deaths that occur from uncomplicated chest wounds in the first day may fairly be ascribed to primary hæmorrhage From the second day onwards it is infection that kills the man—infection either within the thorax or in other complicating wounds and especially those of the abdomen Pneumonia or purulent bronchitis is occasionally met with as a fatal factor in chest wounds

Hæmorrhage may be caused by any form of projectile, but sepsis is at least twice as frequent with wounds by shell fragment as with those by rifle bullets Statistics if complete, would therefore be required to show the cause of death in all fatal cases the proportion of septic cases among all chest wounds and the association of these particular consequences with the different types of projectile that had inflicted the wound and with the retention or otherwise of the foreign body In respect of sepsis it is also desirable to form a separate class of large open wounds in the chest wall through which there is free air suction and leakage of blood for these whether caused by bullet or shell are a particularly fatal group If full statistics of this nature were available it would be possible to determine the types of wound that ought in view of their peculiar fatality to be dealt with by immediate surgery in the first 24 hours after their infliction

Statistics as to Mortality of Chest Wounds

From the various statistics quoted by French observers Duval[1] took round figures suggesting that out of pure chest wounds that have survived to be carried off the field of battle there is a total mortality of more than 50 per cent when the deaths at successive medical units from front to rear are added together And Maisonnet asserted that very few of the survivors can return to full duty

Grégoire's figures (Feb 7th, 1917) for work at an Auto-chir, where the wounded men were kept under observation for three weeks, were more favourable than these general results In 404 cases of pure chest wounds there were 47 deaths—that is, 11 7 per cent , 57 cases, or 14 per cent , of the total were resected for empyemata, and of these there were 26, or 45 per cent , that died

The statistics given by Depage (Dec 20th 1916) from the special hospital at La Panne, where casualties are received from two to six hours after their occurrence and are detained until convalescence, are of particular value, because this arrangement enabled more complete records to be kept

In a series of 320 pure chest wounds there were 59 deaths—that is, 18·4 per cent Of these, 30 or 9 4 per cent of the total died in the first 24 hours—that is, from hæmorrhage and shock. The later deaths presumably from sepsis formed only 10 per cent of the total survivors Depage, in comment upon these relatively satisfactory figures, emphasises the fact that rather more than half of the casualties were caused by rifle bullet, and he gives the important analysis that the mortality of the latter was only 11 per cent , whereas it was 29 per cent with wounds by shell fragments

The figures of Depage approximate very closely to the generally favourable results that appear in the British Medical Service

For deaths from hæmorrhage and severe injury in our field ambulances no reliable figures have been collected

The returns for casualty clearing stations have in consequence not been adequately controlled by reference to the possibility of men with severe injuries being detained to die at medical units in front of the casualty clearing station level Sir Wilmot Herringham[2] observed at a casualty clearing station a series of 211 consecutive cases from the fighting on the Somme There were 22 deaths, but when fatal injuries of the spine and abdomen were excluded the mortality was only 7 3 per cent This figure is slightly less than the 10 per cent mortality quoted for two stations near the Ypres salient in the first year of the war

But later records from casualty clearing stations sited a little nearer the line which were not covered by retaining traps at the field ambulances in front of them have given a death percentage in pure chest wounds of about 20 Of these roughly one-half died at an early hour from severe injuries, while the remaining 10 per cent succumbed to septic complications Since death statistics of chest wounds have not been collected from the field ambulances for the earlier period when the severest cases tended to be retained at these front units it is impossible to decide whether the practice of passing chest wounds rapidly on to the casualty clearing stations may tend to increase their mortality The fact remains that under the non-operative method of treatment in vogue in the spring of 1917 the mortality at casualty clearing stations was about 20 per cent Very few die at field ambulances

The entire mortality in medical units in the Army area must therefore be rather less than 25 per cent In this reference it should be borne in mind that Depage's figures show that any total percentage of mortality is largely influenced by the nature of the fire to which the men have been exposed

From the base hospitals on lines of communication sufficient cases have been collected to give definite information The general mortality at the base to which chest wounds are transferred at a date from the third day onwards is well below 10 per cent and when complicating wounds are excluded it falls to about 5 per cent , the fatal factor in all these cases being sepsis But in that special group of chest wounds where sepsis develops the mortality is persistently high varying from 20 to 40 per cent [illegible] in accordance with the skill of treatment

The following analyses upon which these general statements are based were kindly given by Lieutenant-Colonel H Pinches and by Major W S Dickie, Major D H de Souza and Captain Fortescue Brickdale, from complete records supplied by the officers commanding each hospital

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[1] Bul Soc. Chir Par Dec 13th 1916

[2] Quart. Journ Medicine January 1917 p 79

EMPYEMATA

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There was no obvious difference between early and late resections in respect of return to duty One patient, though infected, was treated by aspiration only in France, but he had to be resected in the United Kingdom, and was discharged unfit at the end of the fifth month It is difficult to estimate the influence of the size of the collection of fluid, because the ultimate pyo-pneumothorax may be large when the original hæmothorax was small The retention of a shell fragment certainly had an unfavourable influence on return to duty

—	In 6 months or less	After 6 months	Total
Duty	8 (3* 3* 3 3 *4* 4* 5 5)	2 (12* *18*)	10
Fair result (sinus closed)	4 (2½ 3*, 3* 4*)	1 (7*)	5
Unfit	4 (*4** 5*, *6** *6**)	4 (*4** from duty at *6**) *7* *8** 12*)	8

TABLE VI —*Infections by Gas Bacilli Combined with Streptococci, &c*

9 cases 3 caused by bullet 0 being retained
6 , shell 3 ,,

These were chiefly resected in the second or third week

—	In 6 months or less	After 6 months	Total
Duty	1 (4)	3 (7 8* 8, of whom 2 in France at 11 and 12)	4
Fair result (sinus closed)	3 (*2*, 3, *5*)	—	3
Unfit	1 (6*)	1 (at *15* after light duty at *7*	2

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Duty	6 (4½ 5* *5* 5½ 6* 6*)	1 (10*)	7
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Unfit	2 (4½* 6*)	6 (7 9 9* *12* 14 from Reserve Battn at 6 *16* from light duty at *8*)	8

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6 cases : 2 caused by bullet, 1 being retained
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—	In 6 months or less.	After 6 months	Total
Duty	1 (*4**)	1 (*8**)	2
Fair result (sinus closed)	3 (3 4 *4**)	—	3
Unfit	1 (*6**)	—	1

The after results of the different infections are all combined in the next Table, No X The sinus had closed by the third or fourth month in a large proportion of the cases, and nearly one third were fit for duty in six months or less In the whole series there were only two cases in which a minor Estländer operation was performed in England None died But at least one third of the empyema cases had ultimately to be discharged as unfit simply on account of the chest condition, whereas there were none such in the sterile hæmothorax group

The original size of the empyema did not affect the ultimate classification of the convalescent as much as might have been expected About one half (31) of the 64 empyemata had been of large size—that is, roughly 50 oz or more, and about one half of the unfit and one half of those fit for duty were found to have belonged to the group of large empyemata The large sterile hæmothorax got back to duty equally soon, whether caused by bullet or shell, and whether the projectile was or was not retained But a retained foreign body in the septic cases did cause unfitness Thus in the latter group —

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TABLE X —*Total Results of Empyemata (64 Cases)*

—	Bullet		Shell		Total
	Out	Retained	Out.	Retained	
Duty					
6 months or less	9	—	6	3	18
After 6 months	4	1	4	2	11
Total for duty ..	13	1	10	5	29
Fair result (not finally classified)	4	—	8	3	15
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THE MORTALITY AMONG CHEST WOUNDS IN FRANCE

The figures that have been given in the preceding tables may be taken as a fair index of what is the after history of chest wounds that have survived to be sent across the Channel under the present established methods of treatment

During the last nine months, however, the opinion has been gaining ground that better results might be obtained by more active surgery undertaken as soon as possible after the wound was inflicted French surgeons have felt this strongly, and in order to accumulate such evidence as was needed for arriving at a decision on the matter the subject was formally inscribed on the order of the day of the French Society of Surgery on Nov 29th, 1916 Since that date numerous papers and important series of statistics bearing on the question have appeared in the weekly *Bulletins de la Société de Chirurgie de Paris* It is argued in these papers that the mortality from chest wounds is much higher than was at first supposed, and that this high mortality requires vigorous efforts on the part of surgeons to save life Also, in respect of casualties who survive these wounds, evidence is brought forward to show that retained projectiles and especially shell fragments, almost always cause trouble, either by the introduction of sepsis, or, if

From these autopsy records it is evident that the retention of a foreign body does not bear any very close association with the fatal forms of septic hæmothorax that occur at the base hospitals.

Foreign bodies are retained in a large number of chest wounds, but even when embedded in the lung they frequently do not lead to the development of sepsis. Thus out of 83 clinically suspicious cases on the lines of communication in which a projectile was seen by X rays to be retained, only 21 per cent. developed empyemata.

Nor is there any satisfactory evidence from the British Medical Service that a retained foreign body in non infected cases does subsequently cripple the soldier. The 69 examples of sterile hæmothorax quoted in Tables III. and IV. of this paper had projectiles retained in 32.5 per cent. of them. Yet the only one who suffered from the retention was the patient who died in consequence of an operation for the removal of a harmless bullet. Colonel R. D. Rudolf, C.A.M.S., has kindly informed me that in his experience as consultant to a large number of Canadian hospitals in England he has met with no satisfactory proof that a soldier is incapacitated by a retained body in the chest, provided that sepsis had not developed at the time when the casualty was incurred. Until further proof to the contrary is produced, no good reason appears at present to justify early operations on cases with small retained projectiles or simple hæmothorax. The former cause an empyema or later troubles in only a small proportion of the cases. The sterile hæmothorax clot does not invalid a man for an indefinitely long period. Therefore it does not appear advisable in the light of present knowledge to operate as a routine simply in order to clear away hæmothorax clot and to remove a small foreign body.

But in certain carefully chosen cases the fresh work of surgeons has proved that early operations are more than justifiable: they are indeed urgently called for. Such operations may succeed in arresting deadly hæmorrhage, and it is beyond all doubt that they can abort the development of a grave infection in types A, B, and C. With these infecting groups of wounds, as with those where the abdomen as well as the thorax is implicated, the recent advances in chest surgery have already given brilliant results and succeeded in saving lives that would otherwise have most certainly been lost. The last paper of Pierre Duval[5] recounts many such achievements by the French, and equally happy results have rewarded the skill of surgeons with our own armies.

SUMMARY

The chief practical points of this paper may be summarised as follows:—

1. A sterile hæmothorax of moderate size, that is, of about 30 oz., will recover as rapidly by natural absorption as by aspiration.
2. The retention of foreign bodies in the chest in aseptic cases does not appear to exert any crippling effect for military service, but more accurate information is urgently needed on this point.
3. Cases of infected hæmothorax that have been drained in France and transferred to the United Kingdom generally recover rapidly and completely. None die and subsequent operations are rarely needed. More than one-half of these empyema cases can be returned to duty.
4. The late mortality from chest wounds is practically nil in England, and it is only 5 per cent. on the lines of communication in France, but in the area of the armies it is higher than was at first supposed. About 10 or 15 per cent. may die in medical units at an early date from the severity of the injury, and about 10 per cent. may die later at the casualty clearing station from complicating sepsis.
5. Among those casualties which develop sepsis within the chest the mortality is very high, rising to nearly 50 per cent. under the present system of treatment by rib resection and drainage.
6. The old conservative routine of surgical non intervention, except by late drainage, finds its justification only in the satisfactory recovery of those cases of gunshot wound of the chest which remain non infected—that is, about 75 per cent. The high mortality in those which develop sepsis demands a wider practice of the new prophylactic method of cleansing operations performed at an early hour on certain carefully chosen groups of cases.

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[5] Bull. Soc. Chir. Par., June 13th, 1917.

PURULENT BRONCHITIS: ITS INFLUENZAL AND PNEUMOCOCCAL BACTERIOLOGY

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AND

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Introduction.

DISEASES of the respiratory system which come under observation in the Aldershot Command are notorious for the inclusion of a large percentage of atypical cases. Taking the pneumonias, for example, a certain number conform with the book descriptions and pursue the orthodox course, but the majority, though undeniably lobar pneumonia, are nevertheless anomalous in many particulars. Furthermore, they pass without any definite line of demarcation into cases which are definitely broncho-pneumonia, and these in turn grade off without any well defined boundaries into conditions which some would diagnose as broncho-pneumonia, others as bronchitis of varying type and severity, finally to present at the end of a series cases of frankly simple bronchial catarrh.

One point which has impressed all who have had the opportunity of engaging in military practice in the Aldershot Command for any length of time is the occurrence of a considerable number of cases of a definite type clinically recognisable almost at sight, yet different from anything we have been familiar with in men of military age in civil life. To this peculiar type of case we have applied the designation "purulent bronchitis" on account of the characteristic nature of the expectoration. Whether or no we are justified in dignifying this sort of case as a clinical entity, or whether we are dealing with cases of modified simple bronchitis or broncho pneumonia, we feel that it is desirable to draw special attention to them for two chief reasons. In the first place, the affection has a very high mortality—very much higher than that of lobar pneumonia; secondly, there are features and circumstances which suggest an epidemic nature.

A Typical Case of Purulent Bronchitis.

A typical case is as follows. The onset is usually acute, the early symptoms are those of a "cold in the head." The temperature may be 101° or 102° F., but there are no features to distinguish the condition from acute "coryza" or febricula, so that in the majority of cases the patient does not report sick for two or three days, by which time he is sent to hospital. At this stage two features attract particular attention. First, the character of the expectoration: this consists of thick pale yellow dollops of almost pure pus, not the frothy expectoration familiar in ordinary bronchitis; it has no particular odour, and it becomes increasingly abundant until in a day or two it may amount to several ounces in the 24 hours. Secondly, the rapidity of the patient's breathing: this may be so evident that pneumonia suggests itself, yet on examining the chest the only physical signs consist of few or many rhonchi scattered widely, but most marked at the bases of the lungs behind, associated with wheezy vesicular murmur; resonance everywhere is unimpaired and bronchial breathing is absent. The characters of the temperature, pulse rate, and respiration-rate are exemplified below. A little later a third point attracts notice: a peculiar dusky heliotrope type of cyanosis of the face, lips, and ears, so characteristic as to hall mark the nature of the patient's malady even on superficial inspection. By this time dyspnœa is very pronounced; respiration consists of short shallow movements which in bad cases

C—— General Hospital —Receiving relatively light cases period November, 1915 to June 1916

161 pure chest wounds: 4 deaths = 2 5 per cent (also 1 death from abdominal combined with chest wound)

Septic cases 18 = 11 2 per cent. of total or 15 4 of those with effusion

Septic deaths: 4, or 22 2 per cent of septic cases

—	No hæmo-thorax	Sterile effusion.	Septic effusion	Total	Deaths
Rifle bullet	10	32	3	45	—
Shell	10	22	14	46	4
Not stated	24	45	1	70	—
	44	99	18	161	4

C—— Stationary Hospital —Selecting the serious cases out of convoys intended for C—— General Hospital named above: period January to July 1916

64 pure chest wounds 7 deaths = 11 per cent

Septic cases 10 = 15 6 per cent of total or 28·5 per cent. of those with effusions

Deaths in septic cases = 5, or 50 per cent of the septic cases

B—— General Hospital —Receiving severe cases period November, 1916 to May 1917

296 pure chest wounds: 23 deaths = 7 7 per cent

Septic cases 49 = 16 7 per cent. of total, or 24·0 per cent of those with effusions

Deaths in septic cases = 32 per cent during period of January to May

Projectiles: 25 per cent. of the septic cases were through and through wounds without retained foreign bodies

Among 106 cases submitted to X ray examination chiefly because they showed only an entrance wound the results were —

—	No hæmo-thorax	Sterile effusion	Septic effusion	Total
Projectile seen to be retained	33	32	18	83
Nothing seen by X ray	7	13	3	23

B—— Stationary Hospital.—Receiving relatively light cases: period June to December 1916

155 chest wounds, 5 deaths = 3 3 per cent. (also 3 deaths from abdominal combined with chest wounds)

Septic cases 18 = 11 3 per cent of total or 14 0 per cent. of those with effusions

Deaths in septic cases, 5 or 27 5 per cent

Projectiles: retained in 64 cases (49 shell) 4 deaths all from shell

Not retained in 73 cases (44 shell) 3 deaths one from shell

No statement for 21 cases: 1 death

The entire total of 676 cases of pure chest wounds on lines of communication yields the following figures —

General mortality on the lines of communication	5 8 per cent.
Deaths in septic cases	40·0 ,
Proportion of septic cases to all	14 0 ,,
Incidence of sepsis in cases with effusion	20·0 ,,

*These figures are more favourable in respect of the inci*dence of sepsis than those which I analysed in a paper with Colonel Bradford,[3] and they are nearer the truth because they include all the cases admitted to the hospitals during the *period under review, but even so they are unfairly* weighted by severe cases, because two out of the four hospitals were receiving centres for specially severe cases

Under the conservative policy of surgical non interference with chest wounds at the *onset*, the *general results may* therefore be very broadly stated as follows —

Estimated mortality in field ambulance and casualty clearing station 20 to 25 per cent. of which 10 to 15 per cent. are the early *result of shock and* hæmorrhage, while 10 per cent die from sepsis	
Actual mortality on lines of communication	5 per cent, all from sepsis
Actual mortality in England	*Practically nil*

The mortality from *hæmorrhage and shock* is about half of the total death rate in casualties admitted to medical units, though it is not a heavy percentage upon the entire number of bleeding wounds The surgeon at the front sees directly from his own experience which are the cases that are liable to die from such injury and he can at once judge the possibility of saving some of them by early operation

With *infection* the question is more difficult The mortality from sepsis, when deaths at the casualty clearing station are added to those at the base, probably rises to nearly 50 per cent in the cases of hæmothorax where infection has developed, and of those who survive after surgical treatment of the empyema at least one third will need to be invalided out of the Army The group in which a septic hæmothorax occurs is therefore one of most serious importance, and every possible means should be considered for dealing more efficiently with it The hope raised by recent progress in chest surgery is based upon preventive measures, and it is undeniably true that in certain cases an early operation has eradicated an infection that would otherwise have burst out into an empyema

Statistics, however, show that certainly not more than 25 per cent of untreated chest wounds develop this dangerous sepsis, so that it is plain that some selection of cases for operation must be made on the first day so as to choose only those which are likely to develop this complication The following groups have been considered from the point of view of arresting infection

Grouping of Cases in regard to Early Surgical Intervention

A Those with air suction and blood leakage through open holes that are obviously too large for early spontaneous closure The mortality in these when left with nothing but an occluding pad, is exceedingly high Very few are seen to arrive at base hospitals and these generally succumb a few days later unless they are of the favourable type where the wound is near the base of the chest and so chances to provide satisfactory drainage The gravity of the condition is due to the fact that the lung collapses away from the chest wall everywhere, thus leaving for the absorption of septic products an enormous surface of pleura uncovered by blood clot With a closed hæmothorax septic absorption is much slower and less dangerous The statistics quoted above do not clearly distinguish this group of cases, but the experience of every surgeon is agreed as to their serious nature if left without early operation

Grégoire[4] closed 17 of such cases at an early hour, only one died and the remainder recovered without the development of an empyema All surgeons who have attempted operative treatment for these cases have had the satisfaction of some favourable results

B Tangential wounds with severely comminuted ribs, in which there may be continued bleeding from intercostal vessels, while the lung is generally mangled near the wound Such cases are liable to develop a most serious streptococcal infection if the wound track be not immediately cleansed

C Those with large retained fragments of shell In the majority of such wounds death follows soon from hæmorrhage Nearly all the survivors develop gross infections *with anaerobe bacilli and streptococci* The wound track in the lung often holds infected fragments of rib or shreds of dirty clothing even at a distance from the lodging place of the projectile, and the latter almost always carries dirt upon it

A few of the casualties in this group do survive at the base, if the resultant empyema chances to be well localised and is properly drained It remains for surgery to prove whether expectant treatment or immediate attempts to clean the wound in chest and lung more or less completely by early operation will yield a lower death rate

D The group of those with *small* retained projectiles, either shell or rifle bullet Here some conclusions can be justly derived from general figures, despite the meagre nature of those that are available

Roughly 25 per cent of cases of hæmothorax develop sepsis, and out of these infected men 10 or 12 will die, either at the front or at the base But several of these septic cases must belong to Groups A, B, or C, others are caused by through and through wounds The statistics from General Hospital B——, quoted earlier in this paper, show that 25 per cent of all the septic cases, fatal or otherwise, were due to through and through wounds The actual mortality from sepsis in Group D must consequently be small

In a consecutive series of 53 autopsies made at a base hospital in septic deaths from pure chest wounds projectiles were found to be retained in the lungs in only 9 cases, or 17 per cent In 3 out of these 9, death was directly *due to* secondary hæmorrhage caused by sepsis around the retained foreign body in the lung The *figures for the* 53 septic deaths were as follows —

Through and through wounds foreign body not retained 23, or 43 per cent 7 being by shell

Penetrating wounds foreign body retained 30 or 57 per cent which included 25 by shell, of which 8 had foreign body in lung 5 by bullet, of which 1 had foreign body in lung

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[3] British Journal of Surgery vol iii, 1915, p 247

[4] Loc. cit.

From these autopsy records it is evident that the retention of a foreign body does not bear any very close association with the fatal forms of septic hæmothorax that occur at the base hospitals

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Nor is there any satisfactory evidence from the British Medical Service that a retained foreign body in non infected cases does subsequently cripple the soldier The 89 examples of sterile hæmothorax quoted in Tables III and IV of this paper had projectiles retained in 32 5 per cent of them Yet the only one who suffered from the retention was the patient who died in consequence of an operation for the removal of a harmless bullet Colonel R D Rudolf, C A M S, has kindly informed me that in his experience as consultant to a large number of Canadian hospitals in England he has met with no satisfactory proof that a soldier is incapacitated by a retained body in the chest, provided that sepsis had not developed at the time when the casualty was incurred Until further proof to the contrary is produced, no good reason appears at present to justify early operations on cases with small retained projectiles or simple hæmothorax The former cause an empyema or later troubles in only a small proportion of the cases The sterile hæmothorax clot does not invalid a man for an indefinitely long period There fore it does not appear advisable in the light of present knowledge to operate as a routine simply in order to clear away hæmothorax clot and to remove a small foreign body

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SUMMARY

The chief practical points of this paper may be summarised as follows —

1 A sterile hæmothorax of moderate size that is, of about 30 oz will recover as rapidly by natural absorption as by aspiration

2 The retention of foreign bodies in the chest in aseptic cases does not appear to exert any crippling effect for military service but more accurate information is urgently needed on this point

3 Cases of infected hæmothorax that have been drained in France and transferred to the United Kingdom generally recover rapidly and completely None die, and subsequent operations are rarely needed More than one half of these empyema cases can be returned to duty

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[5] Bull Soc Chir Paris June 19th 1917

PURULENT BRONCHITIS ITS INFLUENZAL AND PNEUMOCOCCAL BACTERIOLOGY

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Introduction

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A Typical Case of Purulent Bronchitis

A typical case is as follows The onset is usually a ... the early symptoms are those of a "cold in the h... The temperature may be 101° or 102° F, but there ... features to distinguish the condition from acute " ... or febricula, so that in the majority of c... patient does not report sick for two or thr... by which time he is sent to hospital At th... features attract particular attention First ... of the expectoration this consists of thi... dollops of almost pure pus not the frot... familiar in ordinary bronchitis, it has ... and it becomes increasingly abundant ... it may amount to several ounces in ... the rapidity of the patient s bre... evident that pneumonia suggests ... chest the ... physical signs consist ... scattered widely but most marked at the ba... behind associated with wheezy vesicular murmur, resonance everywhere is unimpaired and bronchial breathing is absent The characters of the temperature pulse rate and respiration-rate are exemplified below A little later a third point attracts notice a peculiar dusky heliotrope type of cyanosis of the face lips and ears so characteristic as to hall mark the nature of the patient s malady even on superficial inspec tion By this time dyspnœa is very pronounced, respiration consists of short shallow movements which in bad cases

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Deaths in septic cases = 32 per cent during period of January to May

Projectiles: 25 per cent. of the septic cases were through-and through wounds without retained foreign bodies

Among *106* cases submitted to X ray examination chiefly because they showed only an entrance wound the results were —

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Actual mortality on lines of communication	5 per cent, all from sepsis
Actual mortality in England	Practically nil

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Statistics, however, show that certainly not more than 25 per cent of untreated chest wounds develop this dangerous sepsis, so that it is plain that some selection of cases for operation must be made on the first day so as to choose only those which are likely to develop this complication The following groups have been considered from the point of view of arresting infection

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Grégoire[4] closed 17 of such cases at an early hour, only one died and the remainder recovered without the development of an empyema All surgeons who have attempted operative treatment for these cases have had the satisfaction of some favourable results

B Tangential wounds with severely comminuted ribs, in which there may be continued bleeding from intercostal vessels, while the lung is generally mangled near the wound Such cases are liable to develop a most serious streptococcal infection if the wound track be not immediately cleansed

C Those with large retained fragments of shell In the majority of such wounds death follows soon from hæmorrhage Nearly all the survivors develop gross infections with anaerobe bacilli and streptococci The wound track in the lung often holds infected fragments of rib or shreds of dirty clothing even at a distance from the lodging place of the projectile, and the latter almost always carries dirt upon it

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D The group of those with small retained projectiles, either shell or rifle bullet Here some conclusions can be justly derived from general figures, despite the meagre nature of those that are available

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In a consecutive series of 53 autopsies made at a base hospital in septic deaths from pure chest wounds projectiles were found to be retained in the lungs in only 9 cases, or 17 per cent In 3 out of these 9, death was directly due to secondary hæmorrhage caused by sepsis around the retained foreign body in the lung The *figures for the* 53 septic deaths were as follows —

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Penetrating wounds foreign *body retained* 30 or 57 per cent which included 25 by shell, of which 8 had foreign body in lung; 5 by bullet of which 1 had foreign body in lung auxiliary military hospital At this time thick yellow purulent phlegm was still being expectorated in abundance and rhonchi were still audible over both lungs At the auxiliary military hospital he suffered a relapse associated with the development of dullness bronchial breathing and crackling râles over the lower half of the right lung behind The bronchial breathing at the right base was very slow to clear up and there were still abnormal signs at this base on June 16th 1917 On June 15th the chest was needled but no fluid was found in the pleural cavity

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[3] British Journal of Surgery vol iii, 1915 p 247

[4] Loc. cit.

The bacteriological findings were as follows The first examination of the sputum showed the presence of *B influenzæ* *Micrococcus catarrhalis* and a streptococcus the second examination the presence of *B influenzæ* pneumococcus *Micrococcus catarrhalis* *Streptococcus longus* and *B fusiformis* (Chart IA, IB.)

CHART IA (CASE 1)

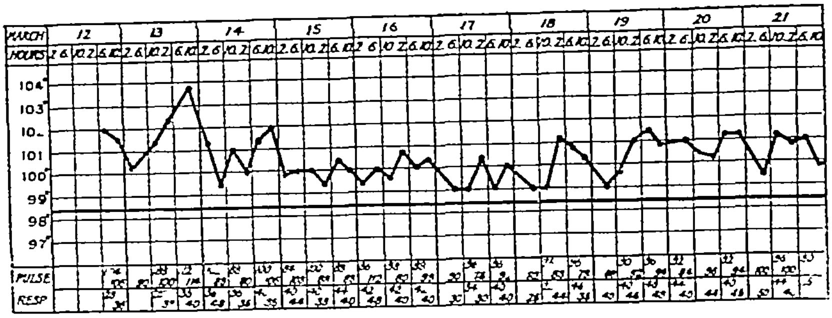
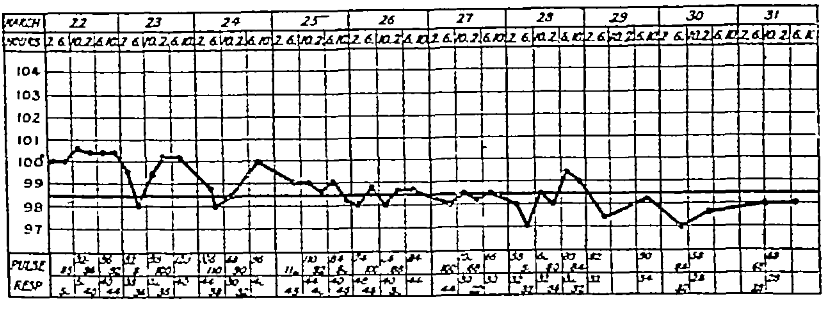


CHART IB (CASE 1)



CASE 2.—D —— Terr Reserve Batt age 16 service one month. Admitted on March 17th 1917 having been taken ill the previous day with shivering cold and pain in the chest. The temperature was 104 F pulse rate 118 respiration rate, 44 The patient was very restless and had much dyspnœa but was not cyanosed The anterior aspect of the lungs presented normal signs posteriorly there were coarse râles non-consonating in character at both bases The sputum was abundant thick purulent airless for the most part pale yellow but with here and there a trace of blood Two days later the patient was very distressed in his breathing restless and moderately cyanosed Râles and rhonchi were present all over both lungs The amount of sputum in the 24 hours was 15 ounces. He was treated by an antiseptic inhalation and an expectorant mixture and his condition was so bad at one time that pituitrin injections were resorted to On March 20th he was better but the sputum was still very thick and abundant, 10 ounces being coughed up in 24 hours On March 22nd the sputum in 24 hours did not exceed 5 ounces and in character it was beginning to be frothy From this time onwards he recovered rapidly and was discharged to duty on April 19th 1917

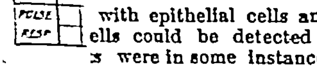
The bacteriological findings were as follows The sputum showed the presence of *B influenzæ* pneumococcus and staphylococcus (Chart II)

Purulent sputum, with rhonchi in the chest persisted until April 23rd after which convalescence was rapid and the man was transferred to an auxiliary military hospital on April 27th 1917

The bacteriological findings were as follows The sputum showed the presence of *B influenza* pneumococcus and *Micrococcus catarrhalis* (Chart III)

CASE 4—H 2nd A M R F C age 35 service four months Admitted on April 4th 1917 with a history of having been out of sorts with a cold and bronchial cough for ten days previously On admission his temperature was 103° F pulse-rate 112 respiration rate 36 Abundant blood stained purulent sputum The accompanying temperature chart indicates the course of the disease The man was seriously ill with purulent bronchitis for ten days improved considerably for a short time then relapsed for a week becoming seriously ill again, but ultimately recovering com Throughout the whole was in hospital he was up abundant thick at first blood

CHART II (CASE 2)



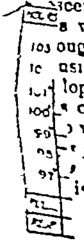
1 severe but not fatal, 2 fatal cases Two cases were only examined bacteriologically whilst convalescing

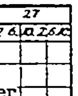
Sputum

Microscopical — Film preparations stained by various methods showed pus cells held together in dense masses by fibrin, with epithelial cells and numerous bacteria. No ells could be detected The bacteria although s were in some instances limited apparently to two

CASE 3-namely, (*a*) minute Gram negative bacilli often
three days g bipolar staining and so simulating diplococci
a col l in intracellular but also in extracellular bunches,
a dry cou extracellular Gram positive lanceolate diplococci
behind th
a this th the bacteriological flora was often very varied
numerou orphology and staining reactions in every instance
first had
thick yell n negative bacillus predominated No tubercle bacilli
consisted countered in any of the specimens

ral —Cultivations were established in every case blood agar, and in 7 of the 8 resulted in a copious h of *B influenzæ* associated with *Streptococcus olatus* (pneumococcus) The exception was a con scent case whose sputum was overlooked, and culture s were not planted until four days after collection, ough intracellular Gram negative bacilli were observed in usion in the films of the sputum the only organism that loped in culture was *Staphylococcus albus* In different one or other species of the *Micrococcus catarrhalis* was met with, also *Micrococcus pyogenes aureus* *Micrococcus pyogenes albus* *Streptococcus pyogenes longus* *Strepto ccus* and *Micrococcus tetragenus* The only two isms common to the entire series however were





identical

1 The local appearances described as produced by the pneu and microscopically consisted of with a minimum of fibrin and enormous cocci, in one of the local lesions a bacilli were also found after prolonged search in each instance gave a mixed growth of pneumococcus and *B influenzæ*

2 *Heart blood* —This contained numerous pneumococci and cultures gave a pure growth of pneumococci

3 *Spleen pulp* —This showed pneumococci and in one some bunches of minute Gram negative bacilli Cultures gave a mixed growth of pneumococcus and *B influenzæ*

The pneumococcus isolated from the heart blood of one of these rabbits was tested and found to possess standard virulence—viz , minimal fatal dose = 0·000001 loop

Virulence Determinations

(*a*) *Pneumococci* —An attempt was made to estimate the virulence of the strains of pneumococci isolated from the original sputa from three of the cases (from two mild and one severe subsequently fatal case) by the method described by Eyre and Washbourn In each of these three strains the virulence was found to be exceedingly low a dose of many loopfuls being needed to kill a mouse as compared with standard virulence of 0 000001 loop The various strains of pneumococci present in the original sputa must therefore be regarded as of exceedingly low virulence but capable of readily acquiring a high degree of virulence as evidenced by the standard virulence of a strain after passage through one rabbit only (see inoculation of sputum above)

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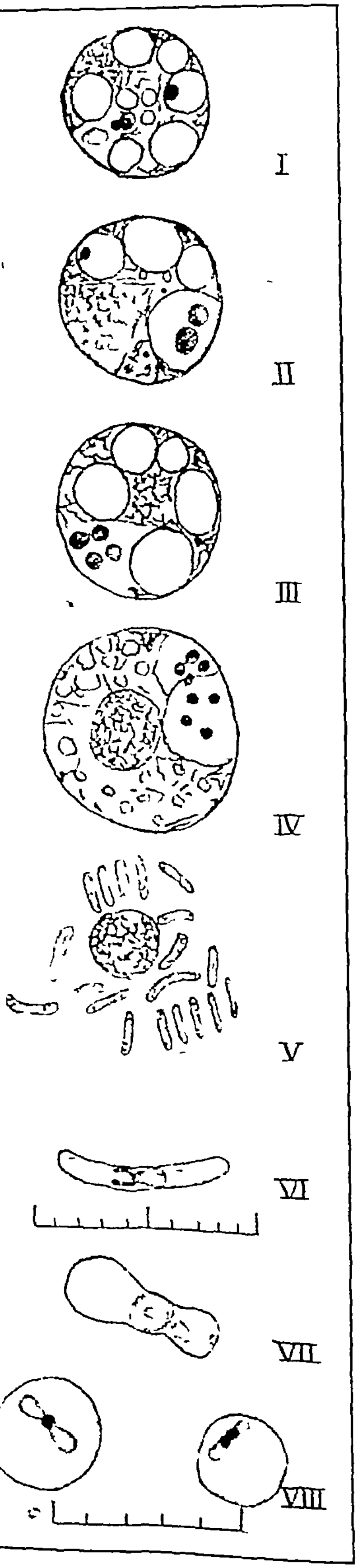
[1] Local Lesions Produced by the Pneumococcus Journal of Pathology and Bacteriology 1906 II., 2 6-269



Diagrams Showing a Few of the Types of the Protozoon of Trench Fever seen in Venous Blood and the Blood and Cells from Spleen and Liver Punctures

In order to study the cycle of development of the organism the blood and cells from liver, spleen, and lung punctures have been examined At Lieutenant R M Wilson's suggestion the cerebro spinal fluid from six of the cases was centrifugalised and the deposit examined The intrathecal pressure of the fluid varied from 10–20 mm. of mercury, the number of cells present varied from one to five or six in 4 c c and were invariably lymphocytes No signs of any hæmogregarines were noted, but the relief of the "shin pain," the hyperalgesia of the skin of middle third of front of legs, the pains in right shoulder, and spleen pains, &c, was so marked, while there was no tendency whatsoever for the pain to return when from 10–12 c c of the fluid were withdrawn, that it is now adopted as a routine method of treatment in such cases of severe pain when other simpler measures have failed to afford relief

One precaution has to be observed in the after treatment of lumbar puncture when the amount of fluid and its pressure are normal—viz, to keep the patient in bed, the foot-end of which has been raised 8–10 inches for at least 36–48 hours in order to avoid the typical lumbar puncture headache which usually follows if the patient is allowed to sit up too soon after the operation This period of rest can be reduced to 6–10 hours if the 10–12 c c. of cerebro spinal fluid removed is at once replaced by a similar volume of sterile normal saline

As the inguinal lymphatic glands were noted to be enlarged and somewhat shotty in certain cases the blood from gland puncture in several of the patients was examined, and in one or two the presence of the hæmogregarine was detected with difficulty and after prolonged examination of thin and thick films (Major W Byam informs me that this shotty condition of the inguinal glands is common in the soldier, and that such enlargement cannot be associated with trench fever In some of the cases, however, axillary and cervical glands were somewhat hard and shotty, and in these specific disease could apparently be excluded)

The difficulty of finding the protozoon in the lymphatic glands suggests that such are not their habitat as is the liver, and to a less extent the spleen and lung and probably the bone marrow The examination of the blood withdrawn from the periosteal thickenings of the tibia in certain of the cases is being followed up, but with indefinite results up to the present The blood films were stained by one or other of the following methods Giemsa's, Leishman's, or Wright's, and in certain cases Heidenheim's iron hæmatoxylin method

A rapid staining method has also been used with excellent results—viz 0 228 gramme of eosin azur ground up and dissolved in 50 c c of pure methyl alcohol. This is allowed to stand for 10–12 days and the supernatant fluid centrifugalised and used to fix and stain the films After three minutes' action of the stain it is rapidly washed away by quickly drawing the slide through distilled water once or twice and then quickly and vigorously shaking dry in order to avoid prolonged action of the water which removes the blue from the structures stained therewith

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It seems not unlikely that these patients suffer from a primary invasion of their lung tissues by the *B influenzæ*, and that pneumococci, present at the same time, are at first of low virulence The earlier symptoms seem to be attributable to a *B influenzæ* toxæmia Exaltation of the virulence of the pneumococci by symbiotic growth with *B influenzæ* would appear to follow, a fatal termination being due to pneumococcal septicæmia

Mortality

Although the above eight cases constitute but a small portion of the total number that have been in the hospital altogether, they were consecutive cases not selected in any way and they show a mortality of 25 per cent, sufficiently indicating the seriousness of the disease When a patient has become decidedly cyanosed no treatment that we have been able to devise appears to do any good Loss of men from the malady is likely to be prevented not so much by means of treatment when the disease is well established as by getting the men into hospital early when they are in a condition of what in civil practice would be regarded perhaps as a quite trivial bronchial catarrh Seeing that a large percentage of our cases came from one unit—6 out of 8 in the above series, although the Connaught Hospital admits patients without selection from almost every unit in the command—and seeing that the bacterial infection appears to be primarily an influenzal one another line of treatment which suggests itself is isolation of the cases and disinfection in the hope of preventing the spread by contact of this serious form of influenzal infection, and thus consequent loss of life We could emphasise again that although we have dealt with only eight cases in detail we have had a much larger number altogether, and we have heard that the malady has been by no means confined to our command

Our best thanks are due to Lieutenant-Colonel William Turner, C M G, officer commanding the Connaught Hospital, for permission to publish these cases

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TRENCH FEVER, OR P U O, ASSOCIATED WITH THE PRESENCE OF A HÆMOGREGARINE

BY LYN DIMOND M B, CH B MANCH,
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THE presence of a small hæmogregarine resembling in many respects the *Hæmogregarina gracilis* found by Wenyon[1] in a lizard host, *Mabuia quinquetæniata*, has been noted in the venous blood, the blood from liver spleen, and lung punctures in 12 cases of P U O or trench fever As a prolonged investigation of the capillary blood by means of thin films and the Ross thick film method failed to give uniform positive results an examination of the venous blood was undertaken

An enormous number of films were examined and at frequent intervals forms were discovered which by their shape and staining reactions suggested the possibility that they might be hæmogregarines As these bodies were obviously present in small numbers, even when the blood was examined upon the day or two preceding the febrile stages of the disease, the following technique was adopted in order to obtain the necessary number for purposes of diagnosis and observation

Technique —The specimens of blood from the cases of trench fever, which included 8 of McNee, Renshaw, and Brunt's[2] Class A and 4 of their Class B, or periodically relapsing type, were invariably examined together with the blood of controls in whose case trench fever and even the contact with lice could be excluded Thirteen such control cases have been so examined The distilled water used was invariably filtered through porcelain, and all the glass apparatus and slides were specially well cleaned, sterilised, and the latter kept in absolute alcohol and flamed before use in order to exclude extraneous organisms such as yeasts &c All blood films however prepared, were immediately covered with glass shades in order to avoid the possibility of any organisms gaining access thereto from the air

Two c c of the venous blood was obtained by means of a 2 or 5 c c syringe from the median basilic vein and at once syringed into a sterile filtered solution of 1 8 per cent sodium citrate To this was added 2 3, or 4 c c of a 0 5 per cent solution of saponin previously filtered and sterilised in order to cause complete hæmolysis of the red corpuscles and more or less complete cytolysis of the leucocytes according to the amount added The clear red fluid was then placed in the boats of a centrifuge and centrifugalised for 1½ to 2 hours, when all the supernatant clear fluid was poured off and the deposit spread on clean flamed glass slides by means of a sterile pipette and allowed to dry in the air

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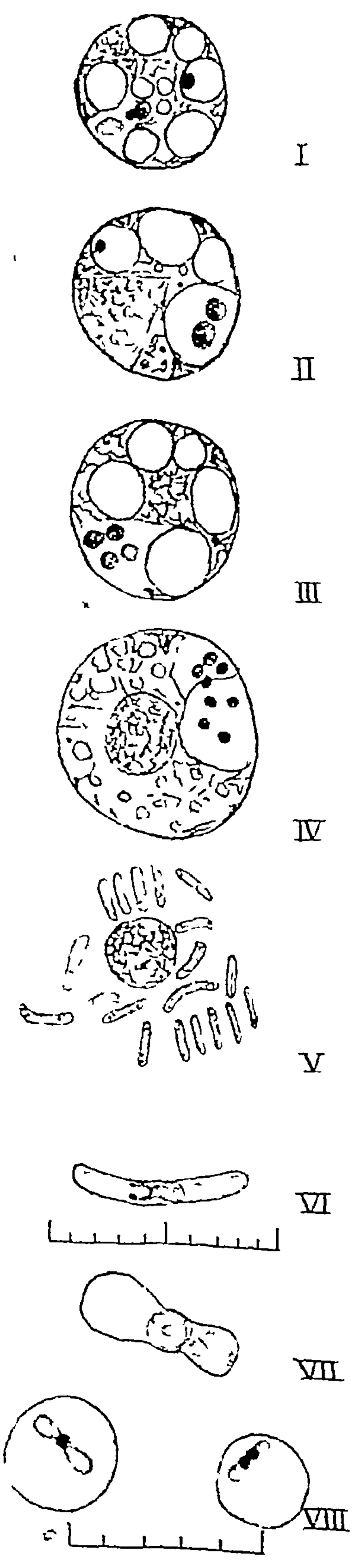

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In addition to the above technique, diagnosis has been confirmed by prolonged study of ordinary thick and thin films of the venous blood

The child seemed to be getting slightly better on the 8th ıd 9th. It could only take fluids very well at some times, ıdly at others Intelligence slightly better On the 9th it ould grasp a finger put into its hand The temperature, wever was higher The excoriations in perianal region re very much better, and the stools green at first had ome brown On the 10th the swellings in the joints had ırely subsided, joints were normal in every respect, ept stiffness due to meningitic condition The fontanelle all along been level with the surroundings, and not tense the 10th the physical signs were all as on admission, pt that the knees were rigidly extended, and the cry less ıent The abdominal wall was lax as before but minal reflex was absent. Lumbar puncture at 2 P M slightly more turbid fluid than before under slightly ısed pressure 15 c c collected but not examined On lth general condition was worse, child quite uncon

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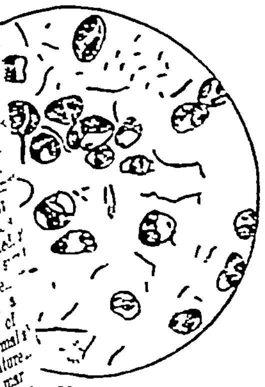

March 7th 1917 All the ıll in the field have been the free-lying ones

FIG 2.

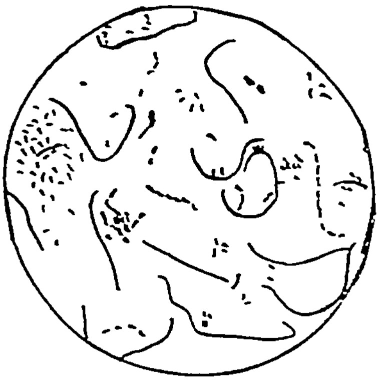

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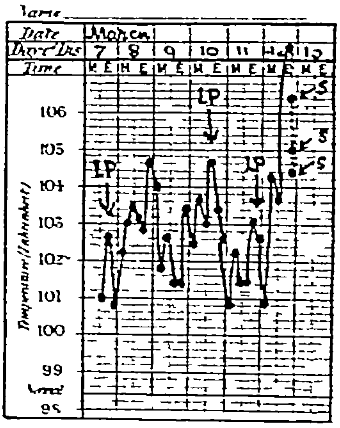
Chart of a Case of Influenzal Meningitis in a child of 14 months



LP Lumbar puncture S Cold sponging

Liver Normal, gall bladder came to surface through liver substance about ½ an inch above sharp margin Spleen enlarged a little, slightly congested Kidneys and stomach normal Intestines Peyer s patches very prominent and inflamed few small hæmorrhages in some Peritoneum and mesenteric glands normal

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Med Jour 1913, ii., 1056

TENARIAN —Mrs Jane Welsford, ted the 103rd anniversary of her

E METCALFE —By the death B S Durh the con mi y of t a good fri ed at and St T pital in N and me years n on ıment in hite ut Society le th so arranged as to give it a rosette appearance Other types of "sausage" bodies are encountered in the blood of these cases similar in size to the preceding, but whose round or oval nucleus consists of a thin red stained circumference with a single deep-red chromosome at its centre One or other or all of these types of merozoite may be present according to the stage of the disease in relation to the pyrexia, being most numerous just preceding the febrile stage They gradually increase in number up to the height of fever, when they disappear, and the day after the pyrexia none of these forms can be found in the blood, the only form of parasite then present being the parthenogenetic gametocyte This gametocyte can be found in different stages of development according to the time elapsed subsequent to the pyrexial stage, and ultimately just before the rise of temperature gives rise to 20 merozoites

A rough diagram of the cycle of development of this parthenogenetic origin of the merozoites is appended, as during the latent stages of trench fever a diagnosis can be made with absolute certainty by finding any of these characteristic bodies in the venous blood, spleen, or liver Personally I have found spleen puncture the quickest way to establish the diagnosis of trench fever

In brief, this gametocyte of the hæmogregarine of trench fever is a round, oval, or bluntly triangular body in shape, which in the first stages of development is 4–6 μ long by 3–5 μ wide The cytoplasm is stained an intense blue, and is coarsely reticular in specimens stained by Giemsa's method There is a large, diffuse purple nucleus *de reliquat* and at the periphery of the cell there is a dense, deep red stained nucleus rich in chromatin This is usually situated at an opposite pole to the nucleus *de reliquat*, and in the first stages of development it is round, later oval, and then rod shaped As development continues this nucleus divides into two, then four, eight, until when 20 nuclei are formed sporulation commences with the setting free of 20 small merozoites These merozoites at the moment of sporulation are generally 0 75–1 2 μ long, and gradually become larger until the mid stages of pyrexia when they disappear from the venous blood In distinction from the gametocyte of latent malaria (*H vivax* infection) this gametocyte of trench fever possesses no pigment or hæmozoin The size of the gametocyte at the moment of sporulation is 13–15 μ. In addition to this form of development of the merozoites, the micromerozoites develop by a process of schizogony, the schizont when first noted in the liver or blood being an oval purple stained body 5 5 μ long by 4 5 μ broad, the periphery of which is crenated and just within which crenations is a row of small nuclei which completely encircle the schizont

There is also evidence that the merozoites develop asexually with the production of a second type of schizont in the liver In the liver and occasionally in the venous blood what are apparently the gametocytes, or sexual forms, are to be noted The female gametocyte consists of a circular dense ring shaped nucleus with a central chromosome On either side of the nucleus are two semicircular uniform masses of cytoplasm, one of greater transverse diameter than the other The measurements of a typical example are length 5 μ width of wider cytoplasmic mass 3 4 μ, of the smaller 2 2 μ, and the diameter of the nucleus 1 7 μ The male gametocyte is a round or egg shaped body 3–3 5 μ in diameter with a centrally situated nucleus usually with three chromatin masses Both these two bodies are very distinct, easily recognised in fresh preparations, and when stained by Giemsa's method the cytoplasm stains an azure blue and the nucleus a very distinct deep red

The fact that this protozoon of trench fever is a hæmogregarine suggests the extreme probability that the *Pediculus corporis*, or what is even more likely that a louse allied to the *Hæmatopinus stephensi*, described by Newstead and Christophers as parasitic on the Indian field rat, is the carrier of the protozoon The presence of such large numbers of rats in the trenches which come into close association with our troops seems to favour this conclusion An effort is being made to trace out the cycle of sporogony in the stomach cells of the different types of lice commonly present in the under clothing of our soldiers

I would like to take this opportunity of thanking Major Byam, R A M C, to whom I am indebted for bringing together in one hospital the clinical material upon which the present work is being done In addition, I would like to thank Miss Brad and Corporal Haylock, my assistants, for their help in carrying out this research I am also much indebted to Lieutenant Wilson, R A M C, who has clinical charge of these cases, for much help and valuable suggestions.

Since writing the above paper I have had opportunities of confirming the presence of the hæmogregarine in a number of other cases of trench fever, and also, in addition, in cases of D A.H complicated with some of the clinical signs of P U O and one or two cases of definite benign tertian malaria

In the cases of double infection, with the parasites of malaria and trench fever, a significant feature was the fact that quinine was powerless to subdue completely the pyrexial attacks which we now know were partly due to the protozoon of malaria and partly to the hæmogregarine of trench fever

Bibliography —1 Wenyon: Third Report Wellcome Research Laboratories at the Gordon Memorial College Khartoum p 153 2 McNee Renshaw Brunt: 'Trench Fever a Relapsing Fever Occurring with the British Forces in France, Journal of the Royal Army Medical Corps April 1916. 3 Dimond: The Blood Platelets in Health and Disease Journal of Pathology and Bacteriology vol. xix 1913 p 508

A CASE OF INFLUENZAL MENINGITIS

By K S BHAT, M R C S, L R C P LOND,
RESIDENT MEDICAL OFFICER, EAST LONDON HOSPITAL FOR CHILDREN, SHADWELL, E

PATIENT, a female child aged 14 months admitted on March 7th, 1917, into East London Hospital for Children, Shadwell under care of Dr T Fisher The child had then been ill ten days with "bronchitis" and had been treated outside The illness started with a sore-throat, the child had vomited and gone blue in lips on first day of illness It was coughing during five days previous to admission The right shoulder, left wrist, and left ankle joints were noticed to have swollen on the day before admission No tuberculous family history

The child looked obviously ill and semi-conscious and not quite intelligent It would not grasp a finger put into its hand It was very restless, jerking the limbs about now and then, and frequently uttering a sharp short cry without apparent external cause Head was strongly retracted and neck rigid, altogether a moderate degree of opisthotonos Arms were adducted over chest, elbows semi-extended, wrists strongly dorsiflexed, fingers bent into palms, and the whole limbs rotated so that dorsal aspects of wrists faced each other Toes bent into soles, ankles hyper-extended Knee-jerks very exaggerated, tending to clonus, plantar reflexes extensor Kernig's sign was very evident in both limbs. Supinator jerk present on right side, not looked for on left. Abdominal wall lax, abdominal reflex present Lungs quite normal no sign of bronchitis Heart's action rapid, nothing else abnormal about heart or pulse, rate 140, respirations 36, temperature 101° F Spleen not palpable liver one inch below costal margin in right nipple line The abdominal skin was slightly inelastic Pupils reacted normally to light. Fontanelle not bulging The throat was slightly redder than normal, tonsils slightly enlarged The external genitals and perianal region generally were much excoriated Doughy swellings were present in right shoulder, left wrist and left ankle joints, no fluid detected Movement was practically perfect in range, but evidently painful and resisted

On account of these swellings and the evident meningitic condition the child was admitted into hospital with the diagnosis of tuberculous meningitis Lumbar puncture was done soon after admission.

The cerebrospinal fluid was very slightly turbid, under slightly increased pressure, Cells 150 per c mm, 54 p c. polymorphonuclears, 46 p c lymphocytes In counting these 100 cells 18 "endothelial" cells also seen Globulin slightly increased, no reducing substance present The film made from c s fluid for differential count of leucocytes showed typical influenza bacilli in large numbers, both short isolated bacilli and long chain forms These long chain forms were found to consist of the short bacilli joined end to end by a cell membrane This resolution needed an objective of N A 1 3, and was better shown with an objective of N A. 1 4 The bacilli were almost all extracellular, very few indeed being seen within the polymorphonuclears Cultures showed the organism to be a typical bacillus of influenza Subsequently on another lumbar puncture a culture was taken on blood agar and sent to Dr P N Panton, who very kindly examined it and pronounced the culture sent to be "a typical bacillus of the influenza type

The child seemed to be getting slightly better on the 8th and 9th It could only take fluids very well at some times, badly at others Intelligence slightly better On the 9th it would grasp a finger put into its hand The temperature, however, was higher The excoriations in perianal region were very much better, and the stools, green at first, had become brown On the 10th the swellings in the joints had entirely subsided, joints were normal in every respect, except stiffness due to meningitic condition The fontanelle had all along been level with the surroundings, and not tense On the 10th, the physical signs were all as on admission, except that the knees were rigidly extended, and the cry less frequent The abdominal wall was lax as before, but abdominal reflex was absent Lumbar puncture at 2 P M gave slightly more turbid fluid than before under slightly increased pressure 15 c c collected, but not examined On the 11th, general condition was worse, child quite unconscious

The head and eyes were turned to the right, but head could fairly easily be moved to the left Opisthotonos still present, but rigidity altogether less than up to previous day Reflexes still exaggerated (abdominal reflex absent) but not former tendency to clonus in knee-jerks Left knee-jerk was much more brisk and pronounced than right Joints quite normal looking Fontanelle slightly tenser than before, still level with surroundings Meningitic cry less frequent Throat was no redder than normal, tonsils remained slightly enlarged but not acutely inflamed Heart's action very rapid A few fine moist sounds could be heard all over right lung Abdominal wall quite lax, abdominal reflex absent Liver extended to 1½ inches below costal margin in right nipple line, spleen not palpable The feeds were being taken very badly Stools were greenish yellow, but perianal excoriation much better

At 10 P M on the 11th the child looked very much worse The cry had stopped Fontanelle tense slightly bulging

Lumbar puncture gave 15 c c of very turbid fluid, like dilute milk flowing quite freely, under slightly increased pressure A culture from this was put up on blood agar, and sent next day to Dr Panton who as said above confirmed the organism as the bacillus of influenza Globulin and reducing substance not tested for Cells too numerous to be counted On 25 squares of a Thoma hæmocytometer were two masses of 20 to 25 white cells each, and 67 discrete white cells A film showed almost all cells to be polymorphonuclears, very few other types indeed seen Also enormous numbers of influenza bacilli, both isolated and chain forms, almost all extracellular, very few being intracellular

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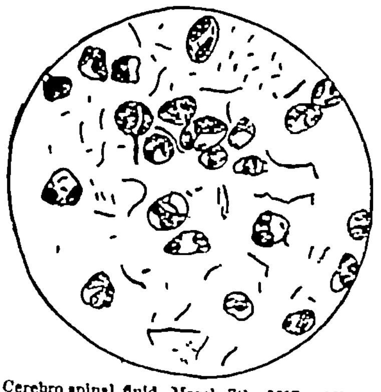
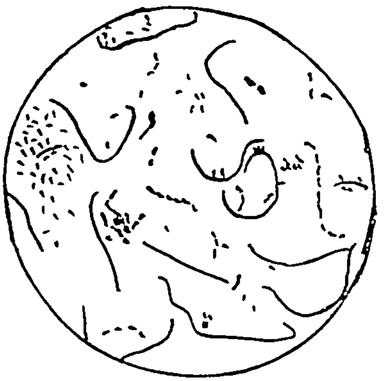


Cerebro spinal fluid, March 7th 1917 All the intracellular bacilli in the field have been drawn but not all the free-lying ones

FIG 2



Culture from the cerebro-spinal fluid (Not all the bacilli in the field have been drawn)

The child continued in a low state till 2 P M the next day (12th March) when suddenly hyperpyrexia set in, temperature rising to 107 6°

The knee-jerks were sluggish and difficult to elicit Left knee jerk was even then more evident and easily elicited than right Limbs very flaccid No rigidity anywhere Child was absolutely unconscious no cry, diaphragm paralysed Respiration very rapid and thoracic abdominal respiratory movements reversed Sharp moist sounds over both lungs in such abundance that it was impossible to hear the heart Alæ nasi were working very evidently Pulse very small and very frequent Pupils inactive to light and very contracted Neck quite flaccid, fontanelle not tense and level with surroundings

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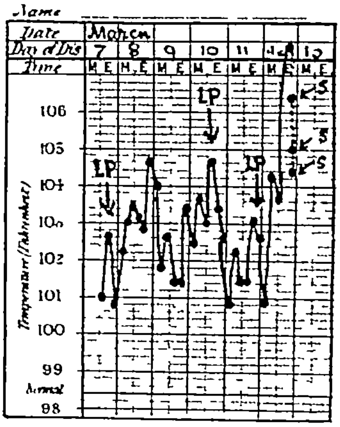

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[1] Brit Med Jour 1913 ii., 1056

A DEVONSHIRE CENTENARIAN —Mrs Jane Welsford, of Newton Abbot, celebrated the 103rd anniversary of her birthday on August 21st

THE LATE DR GEORGE METCALFE —By the death of George Metcalfe, M D, B S Durh the community of Skelmersdale Lancs, has lost a good friend Educated at the Newcastle School of Medicine and St Thomas's Hospital, Dr Metcalfe had practised in Newcastle, Bristol, and Tottenham, and had spent some years as civil surgeon on the Gold Coast, before his appointment in 1905 to the White Moss Colliery Sick and Accident Society at Skelmersdale, where he remained until his death so arranged as to give it a rosette appearance Other types of "sausage" bodies are encountered in the blood of these cases similar in size to the preceding, but whose round or oval nucleus consists of a thin red stained circumference with a single deep-red chromosome at its centre One or other or all of these types of merozoite may be present according to the stage of the disease in relation to the pyrexia, being most numerous just preceding the febrile stage They gradually increase in number up to the height of fever, when they disappear, and the day after the pyrexia none of these forms can be found in the blood, the only form of parasite then present being the parthenogenetic gametocyte This gametocyte can be found in different stages of development according to the time elapsed subsequent to the pyrexial stage, and ultimately just before the rise of temperature gives rise to 20 merozoites

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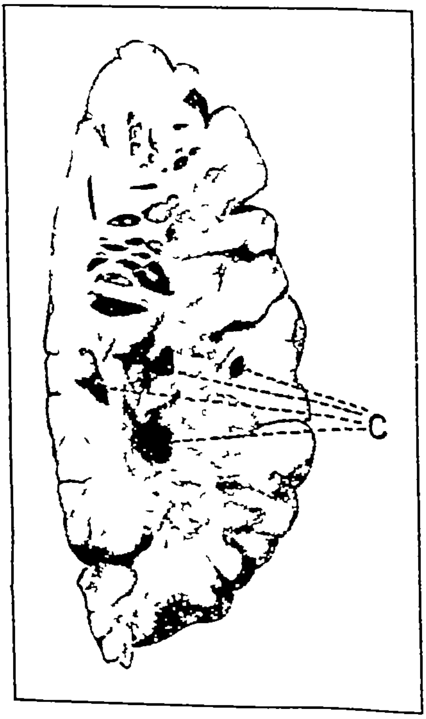
A CASE OF ADVANCED MULTIPLE BRAIN SOFTENING

BY THOMAS WALMSLEY M D GLASG
TEMP. ASSISTANT MEDICAL OFFICER, ROYAL ASYLUM MONTROSE.

THE patient a woman aged 26 was admitted to this asylum for the first time in 1889, two years after her marriage She suffered from left otitis media purulenta, had an offensive vaginal discharge, showed the signs of prolonged alimentary disorder, but her respiratory and circulatory systems were reported normal Her mental state was one of acute excitement of short duration and was accompanied by well marked motor disturbance. She was discharged in eight months' time and was then noted to be an active minded woman acute and penetrative but idle vain, and boisterous and given to the use of coarse language She was readmitted three years later, widowed her husband having died in the interval in this asylum from general paralysis of the insane She again showed signs of alimentary derangement, was anæmic had a slight organic mitral murmur, but had no signs of organic nervous disease She had a dull stupid expression, was with difficulty induced to speak, and gave meaningless and mechanical answers, was degraded in her habits, and had delusions of bodily sensation inclined towards a sexual basis, ' people sitting on her eyelids who tell her to do wicked things ' The development of her condition was rapidly towards a complete dementia but interrupted by short periods of excitement characterised by loud prolonged laughter and in 1913 by two epileptic fits She died in 1916 The notes made shortly before her death indicate that she had become very stout that her extremities were constantly cold and blue her skin dry and harsh that there was no paralysis of her limbs, and that she had cardiac symptoms pointing towards myocardial degeneration Mentally she was in a condition of stuporose dementia, she was unable to initiate the simplest voluntary activity, she remained motionless wherever she was placed, allowed the saliva to dribble from her mouth, always required to be fed, did not attend to her natural needs, in fact she showed a distinct resemblance to the behaviour of a decerebrated frog

FIG 1

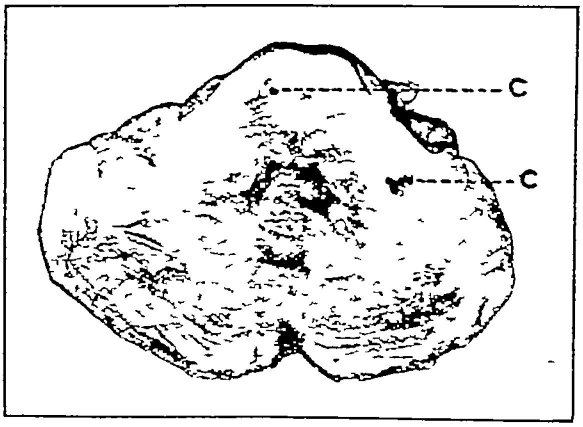


Under view of a section of the cerebrum at the level of the centrum semi-ovale showing cyst cavities (c) of the white matter

A post mortem examination was made on the morning after death There were no signs of localised wastings no marks of injury or of trophic sores on the body There were a few small uterine myomata chiefly subperitoneal The pleuræ and lungs were healthy There was no pericardial disease The heart wall was soft, very fatty and easily torn all the heart valves were thickened and hard though but slightly incompetent The aorta showed patchy atheroma over the arch and at its bifurcation The membranes of the brain were congested, slightly thickened, but without the signs of inflammation, and there were no subdural deposits, the pia stripped readily from the brain surface, the Pacchionian bodies seemed normal There was a great excess of cerebro-spinal fluid, which contained a slight amount (not estimated quantitatively) of albumin The arteries of the brain were normal in their macroscopic distribution, they showed patchy atheroma on their larger branches The convolution system of the brain was normal in amount and not unusual in design, but the whole brain looked atrophic but was without any areas of superficial decortication.

Section of the hemispheres (FIG 1) revealed (bilaterally) numerous cyst cavities, inconstant in size and shape, though in the same brain area tending to have a uniform conformation They were absent from the cerebral cortex, and though a few were present in the basal ganglia they were mostly confined to the white matter and especially numerous towards the anterior end of the brain They extended, however through the mid brain, cerebellum, pons, and medulla (FIG 2) In all the boundary wall appeared to be smooth though not of the nature of an "encystment capsule" The appearances presented in many instances led me to the opinion that the individual cysts had undergone a progressive increase in size and the intervening brain substance having undergone a pressure atrophy neighbouring cysts had become confluent I believe this to be confirmed by the fact that in every instance in which it was possible to make a complete examination of a cyst wall an aperture of communication to the surface of the brain was present, in some cases a mere pin point channel, in others a wide slit opening in the depths of a cerebral fissure In the latter cases it was always easy to determine the line along which the pia mater abruptly terminated and the cyst wall commenced—that is there was no ingrowth of pia into the brain substance I believe however that the cerebro-spinal fluid would enter these cavities and would thus account for their progressive increase in size

FIG 2



Section of pons and cerebellum showing cystic formation c Cyst

Microscopic examination of an affected area showed that the cyst wall was formed of brain tissue, there being no alteration in the density of the peripheral neuroglia and no decrease in the number of peripheral nerve fibres—that is there was nothing in the nature of a lining membrane, and under high magnification the wall appeared rough in the cilia like projections of neuroglia Areas of commencing softening at different stages were also to be observed. In the more advanced the nerve fibres had retained their normal appearances even while the neuroglia has become more or less homogeneous The earliest stages in which there was simply a ' loosening ' of the neuroglial network were found in relation to small thrombosed vessels though other vessels slightly larger as a rule, were to be seen, with thrombosis of long standing and an absence of perivascular softening There was no fibrous disease of any vessel within the brain substance examined and the number of vessels did not seem to be increased So far as I was able to determine, there was a complete absence of a reactionary neuroglial overgrowth. The cortex was everywhere shrunken and its cells were fewer in number than the

A CASE OF PERIODIC ATTACKS OF PYREXIA

By R V SOLLY, M D, M R C P Lond, F R C S Eng,
PATHOLOGIST TO THE ROYAL DEVON AND EXETER HOSPITAL AND TO THE GROUPED AUXILIARY HOSPITALS EXETER

The following is a case of periodic attacks of pyrexia with erythematous eruption in a recruit, which were apparently cured by treatment by means of an autogenous vaccine, followed by the intravenous injection of one dose of galyl

Notes of Case

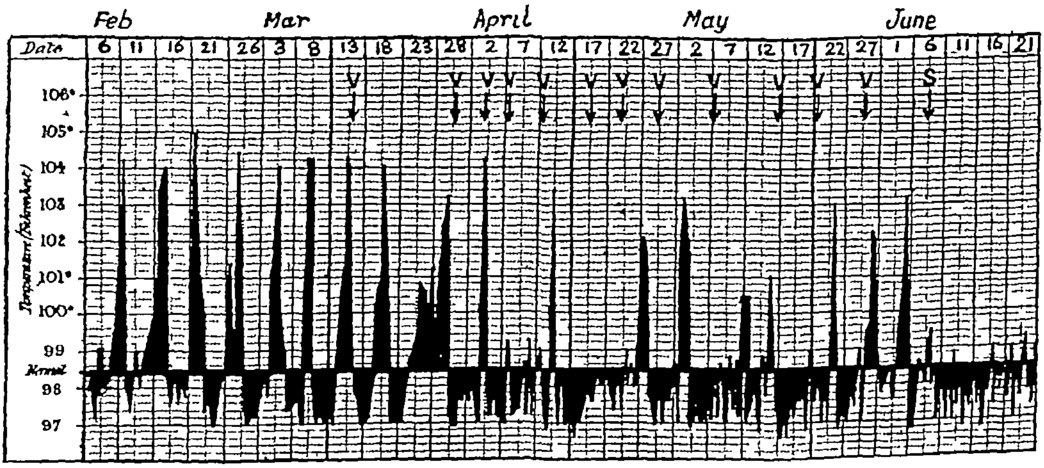
Private M, aged 18, was admitted to No III Temporary Hospital, Exeter, under the care of Lieutenant-Colonel Henry Davy, on Feb 6th, 1917, and discharged to a convalescent hospital near Exeter on July 18th He was in the Army as a recruit only nine days He had been in the Navy for six months, but was discharged, as he was subject to fits He says he had always had good health till he joined the Navy He was sent to the Royal Naval Hospital on June 1st, 1915, and discharged on June 25th He joined the Army in January, 1917, and epileptic fits started again His mother was always in delicate health She suffered from epilepsy from the age of 13 to the time of her death, which was caused by "gastritis, enlarged liver, heart disease, and cancer" Father and sister have good health

On admission the patient's temperature was 105° F, and he was sent in with a diagnosis of pneumonia, but his pyrexia turned out to be only one of the periodic attacks, described below When in the hospital living pediculi (capitis) were found From admission up to March 22nd, practically every five days he had a sudden rise of temperature, up to 104° or 105°, accompanied by pains in the back of the head and limbs and by an erythematous rash on chest, arms, and face These were red, slightly raised patches as large as a half penny There was no itching or burning At the same time the face became distinctly puffy The temperature remained up for 24 hours and then fell as rapidly as it went up When it was falling the patient had attacks of vomiting The pulse during the pyrexia was generally raised to 108–112, between the attacks about 70–90 The patient was otherwise well perhaps somewhat anæmic, except for one or two attacks of epigastric pain Nothing abnormal was detected in heart, lungs, or abdomen

Blood count on March 1st (just after an attack) White cells, 23,000 per c mm Differential count Polymorphs, 91 5 per cent, lymphocytes, 8 per cent, large mononuclears, 0 5 per cent, eosinophiles, none seen

Agglutination tests to *B typhosus* and to *B paratyphosus A* and *B* were carried out with a negative result On two occasions during the attacks of fever blood cultures were performed, and on each a Gram negative bacillus was obtained It had the following cultural characters motile, pleomorphic, caused general turbidity in broth, and grew freely on ordinary agar forming a greyish white confluent growth, with the production of an offensive odour, on potato a dark brown growth It did not liquefy gelatine, though it grew freely at room temperature No acid or gas in glucose, sucrose, lactose, or mannite, and no acid or clot in litmus milk

Chart of a Protracted Case of Periodic Attacks of Fever



V Injections of bacillary vaccine (16 iii, 1 mill 31 iii 2 5 mill 3 and 7 iv 5 mill 12 iv 10 mill 19 23 iv, 5 mill. 29 iv 10 mill 7 16, 22 and 30 v 5 mill) S Intravenous injection of 0 4 gm galyl dissolved in 50 gm distilled water

A vaccine was prepared and several doses given, varying from 1 million up to 10 millions The temperature appeared to have been distinctly modified by the vaccine treatment and on one occasion there was an interval of 9 days without pyrexia, on another of 11 and finally there was an interval with only slight rise of temperature of 20 days However, after this the periodic attacks recurred, and he had three in succession, with the usual intervals, almost as severe as when first admitted so Colonel Davy and I decided to try the effect of an intravenous injection of one of the substitutes for salvarsan, and on June 8th I gave him an intravenous injection of 40 centigrammes of galyl dissolved in 50 c c. distilled water This produced no rise of temperature, and only a slight headache

Since this injection the patient has had no rise of temperature at all and has improved in every way in his general health A Wassermann test was carried out both before the injection and about a week after On each occasion a somewhat weak positive result was obtained, on the last occasion there being somewhat less deviation of complement than the first No further injections of galyl were given, nor has any mercurial or other medicinal treatment been administered

Remarks

I am publishing this case as it stands at the particular request of Colonel Davy, though I do not pretend to be able to say what the cause of the attacks of fever was or to give a name to the condition

In the first place, the temperature appears to have been distinctly modified by the vaccine treatment I do not know what the organism found ought to be called Perhaps it might come under the head of "*Bacillus fæcalis alkaligenes*" Was it a true blood infection or only a contamination?

Looking now at the chart it seems possible that the injections were too frequently repeated, but no definite negative phase was noticed, and the object was by anticipation to prevent the recurrence of the attacks

In spite of the positive Wassermann reaction I cannot imagine that these attacks of pyrexia were due to syphilis, and the high leucocytosis with over 90 per cent of polymorphs is against this Though he had not been out of England or in the trenches, he had been in contact with soldiers and pediculi were found in his head, so that it seemed possible that these attacks might be a peculiar form of "trench fever" possibly due to some unknown spirochæte or protozoon I believe some pathologists (Carnegie Dixon and others) have obtained a positive Wassermann reaction in cases of trench fever, but the effect of injections of salvarsan did not appear to be very conclusive In this case after only one injection given over two months ago, and with no other treatment except previous injections of vaccine, his attacks of pyrexia ceased and he has been well ever since Of course, it is possible that the boy is a congenital syphilitic, and this is perhaps supported by the fact that both he and his mother have been subject to epileptic fits He had not the appearance of a congenital syphilitic patient

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The chief feature of the present edition is the inclusion of the Basle nomenclature For the most part the new names have merely been inserted in brackets after the old ones, but occasionally they have been actually substituted for the old ones The widespread adoption by anatomists of the new nomenclature makes this change almost unavoidable although normal and distributed without definition—evidences of neuronic degeneration

The cerebral lesions in this case I have thought worthy of record on account of their extensive distribution and I am indebted to Dr C J Shaw, physician superintendent of this asylum, for permission to do so They appear to be multiple softenings due to multiple thrombosis of cardio vascular genesis of the "end artery" system of the brain They seem to be without relationship to any possible syphilitic infection but I am unable to describe the condition of the thyroid gland

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

A CASE OF CHICKEN POX SIMULATING SMALL POX

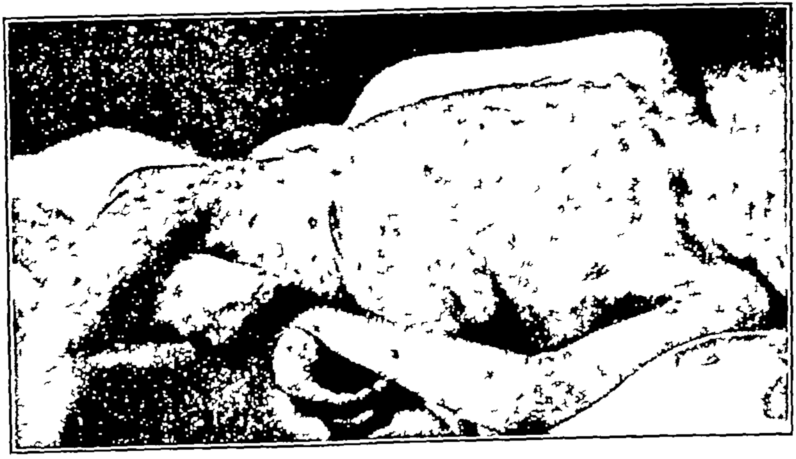
BY F C POYNDER, M A , M B , B CH OXON

THE following case may be worth recording in view of the oft-recurring difficulty of distinguishing a chicken pox rash from that of small pox

The patient was about 4½ years old when he had chicken pox early in 1917 He is an idiot with maldevelopment of brain and long standing contractures, and has frequent fits He has had pneumonia more than once, but has survived all his illnesses, though his low vitality is apparently accountable for the character of the chicken pox rash, which strongly resembled that of small pox.

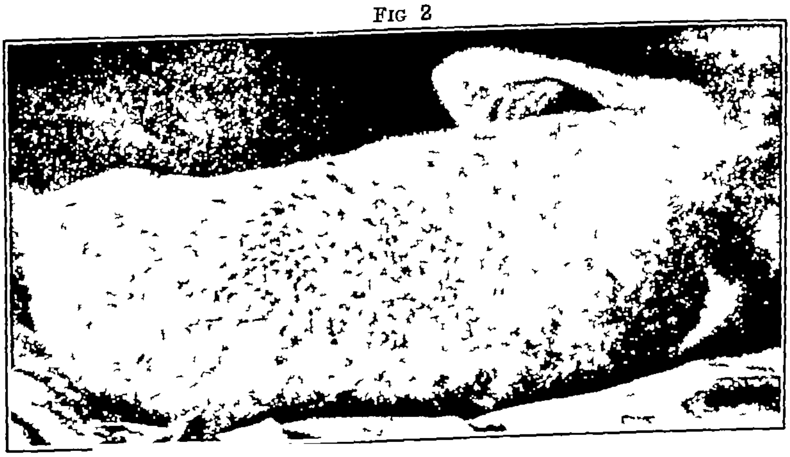
The photographs sufficiently show the character and distribution of the rash

FIG 1



Chicken pox rash simulating small pox in a boy 4½ years of age (a) Ventral surface

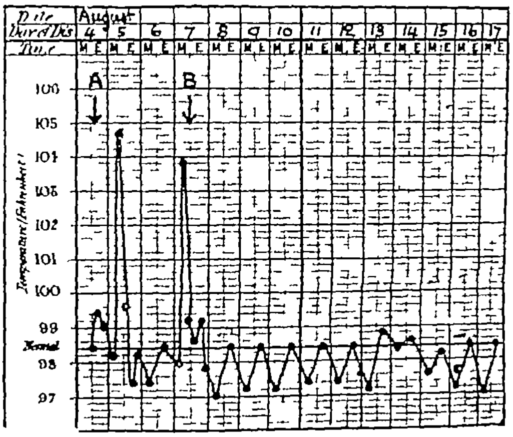
FIG 2



A CASE OF MALARIA ACQUIRED IN ENGLAND

BY S C BISWAS, M R.C S , D P H , D T M & H ,
RESIDENT MEDICAL OFFICER SEAMEN'S HOSPITAL, ROYAL ALBERT DOCK

INTEREST attaches at the present time to the possible acquirement in this country of malaria conveyed from abroad and the following case is published with the permission of Dr C W Daniels, under whose care the patient was



Temperature chart At A benign tertian parasites were found in th blood at B quinine was commenced

A L R , aged 33 years, aircraftsman, R N.A S , wa admitted to the Seamen's Hospital, Royal Albert Dock, o August 6th, with the following history On July 26th whil at Eastchurch, Isle of Sheppey he ha fever, his temperature rising to 103° F he felt hot and he sweated, but had n shivering On July 28th, when in London he had an attack of fever, with shivering &c , and thereafter every alternate da until August 8th this attack was repeated For the last 12 months he has been st tioned at Eastchurch, where he has bee accustomed to sleep in a hut with succe sive batches of men who have served i various parts of East Africa None o these men, so far as he knows, wa actually suffering from fever, but one o them was known to have had malari when in East Africa According to th patient's statement, the hut was so full o mosquitoes that on some nights he coul not sleep The patient has never bee out of England

On admission, his blood was draw from a finger tip, examined, and foun to contain benign tertian parasite mainly gametes The spleen wa enlarged three and a half fingers' breadt below the costal margin There wer no other physical signs and the temper ture was normal Examination of blo on the following day showed beside parasites an increased percentage (16 pe cent) of large mononuclears Th progress of the case in the hospital i illustrated by the accompanying chart which shows two typical tertia paroxysms antecedent to the adminis tration of quinine, and none after H was treated with quinine hydrochlor gr 5 every six hours, from August 7th to 11th, and gr 5 t i d for 10 day subsequently He was also put o tabloid ferri et arseneci co (B W an Co), one t i d , as his spleen was much enlarged

Mosquitoes and chironomidæ have sin been collected from the hut by a frien the patient Among them a specimen o anopheles probably *A maculipennis*, and one of *Culex* (*Culiseta*) *annulatus* can b recognised. These identifications hav been confirmed by Lieutenant-Colone A. Alcock, F R.S

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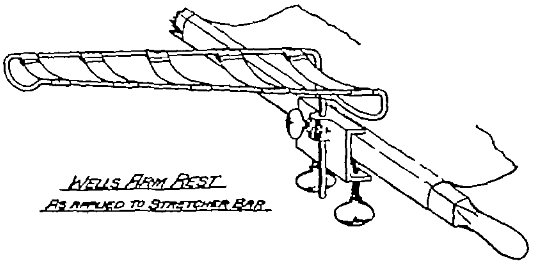
Facts and Fallacies of Compulsory Health Insurance By FREDERICK L HOFFMANN LL D, Statistician, The Prudential Insurance Company of America, Fellow American Statistical Association, Royal Statistical Society, &c *An Address read in part before the* Section on Social and Economic Science of the American Association for the Advancement of Science Dec 28th 1916 and the National Civic Federation, Jan 22nd, 1917 Pp 101

IN a pamphlet which is distinguished by orderly arrangement and lucidity Dr F L Hoffmann examines the existing systems of National Insurance in Europe—that is to say in Great Britain and Germany—with a view to ascertaining how far a similar system, based upon the experience of the nations named, would be likely to prove beneficial if adopted by the several States of America and the Federal Government His investigation is hardly of a judicial character and no doubt he would reply that he did not intend it to be and that his advocacy, directed intentionally against such proposals and suggestions in favour of National Insurance as may be current in the United States could be in no way disguised Nevertheless he has selected statements of facts and of opinion for citation rather too exclusively from the utterances of those hostile to National Insurance, at any rate, so far as this country is concerned, and has contrived to give the impression that nothing is to be said on the other side, and that with us no voice could be raised worth listening to in support of any view different from his own His work in this respect is therefore rather less interesting than are his comparison of social conditions in America with those prevailing here, and his suggestions as to possible social legislation for the national health in his own country

On the whole however he makes out a strong case in favour of the non adoption, or of considerable caution in the adoption, in America of the examples set by us and by Germany, and he is no doubt right in what we are inclined to regard as his main contention which is to be found summarised on p 94 He there says that pecuniary support except during very prolonged sickness ' is not a matter of economic importance to the average American wage worker, more properly concerned with an increase in wages and a decrease in working hours and other matters concerning the maintenance and the raising of his standard of life " Similar tendencies in social and national health development are not unobservable here and are likely to become more conspicuous when peace permits

New Inventions.

AN ARM REST



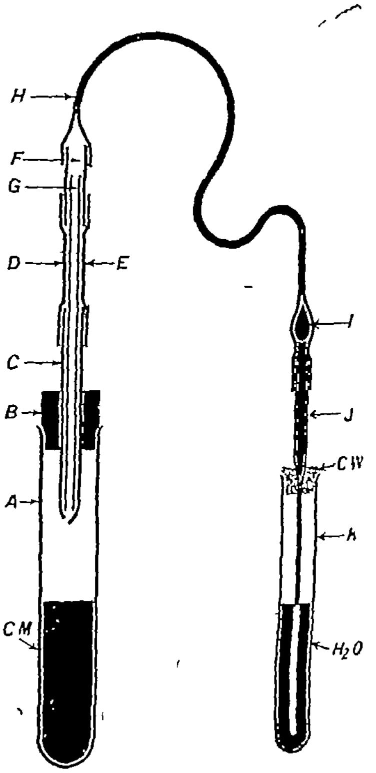
DURING the present prolonged war much time and thought have been devoted to the preservation of damaged limbs Varied and cleverly contrived apparatus has enabled us to maintain them in comfortable positions, so that the continuity of the shattered bones may be ensured, and no effort spared to preserve the former usefulness of the damaged limb No difficulty therefore has been as yet experienced in this direction, and it is only in regard to the question of transport that any feeling of anxiety arises On board ship I have experienced great difficulty in transferring damaged arms when placed in an extended position, from the ambulance to the ward and *I want to draw attention to the simple contrivance which has made this transference easy on board the* H M A T *St Andrew* The apparatus is very simple light and cheaply produced It can be quickly and securely adjusted for use either on a stretcher, a ship s cot, a train bed or hospital bed After months of use I can confidently recommend it The arm rest may be obtained from Messrs Arnold and Sons, Giltspur street, London E C

THEO M KENDALL
O C troops H M A.T *St Andrew* Major R.A M C

APPARATUS FOR THE ISOLATION AND CULTIVATION OF ANAEROBES

To simplify the cultivation of anaerobes, the apparatus here illustrated has been fitted up

To expel the air, the apparatus is heated in the autoclave Air and *steam escape* through the cut (E) in the rubber tubing (D) (Bunsen's valve) When the apparatus cools the steam condenses and atmospheric pressure closes the slit and prevents air entering At the same time water *rises in the* pipette (J) as far as the glass bead (I) To inoculate the culture tube (A) an emulsion of the material to be cultivated is made in a tube of recently boiled broth or saline, and the end of the pipette (J) is placed in it and the rubber round the glass bead (I) is made oval by pressure with the finger and thumb When the fluid has entered the large tube, the pressure is relaxed



A, Test-tube containing culture medium (CM) B Rubber cork with glass tube (C) D 3-in good rubber tubing with longitudinal slit ½ in long (E) made by a sharp knife (exit valve) F Glass tubing G Glass tube or rod to give rigidity to D H Rubber tubing collapsed on account of vacuum in A I Glass bead to occlude H (inlet valve) J Pipette occupied by water from K after the whole apparatus has been autoclaved CW Cotton wool.

If it is desired to isolate the various species of bacteria in a mixture agar is used instead of broth for the culture medium in the large tube This is melted, and before solidifying is *mixed* in the manner above described with the emulsion The agar is then sloped or distributed over the walls of the tube by gentle rotation.

Anaerobic blood cultures can be made direct from a vein by substituting a hypodermic needle for the pipette

I am indebted to Corporal H J Mann, S A M C for his assistance

ALFRED R FRIEL,
Captain S A.M C
B E Force, France

TAUNTON AND SOMERSET HOSPITAL —The Prince of Wales has given £100 to a fund which is being raised to discharge the debt of £4000 which exists against the Taunton and Somerset Hospital

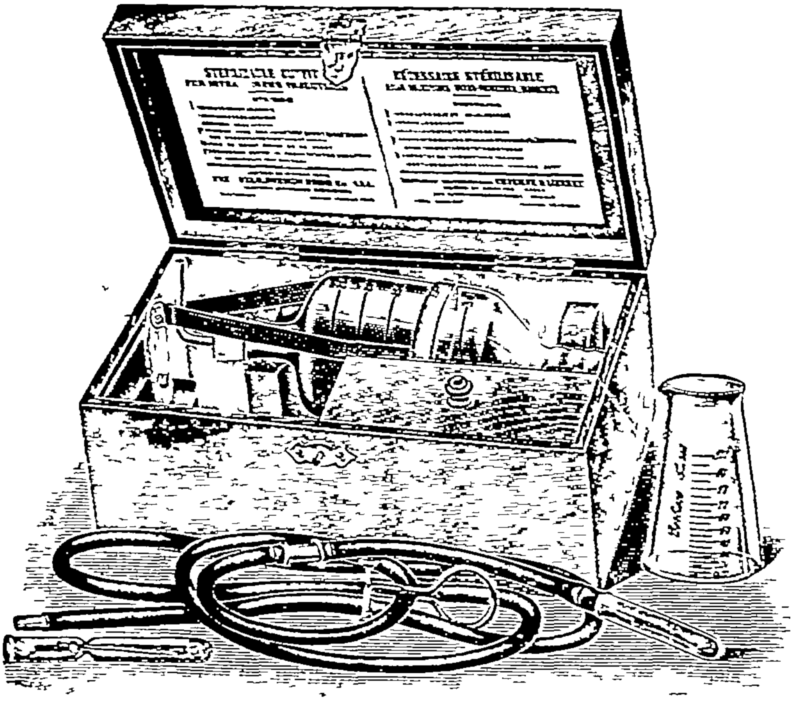
THE
TREATMENT OF VENEREAL DISEASE

STERILIZABLE OUTFIT

For Dilute Intravenous Injections of GALYL and other Solutions

Portable Oak Case
10 in × 5 in,
containing

- 1 250 c c. Graduated Ampoule and rubber stopper and glass tube
- 1 100 c c Graduated Measure.
- 1 Suspension Strap
- 1 Descending Tube with index and glass nozzle fitted with short *bevelled steel* needle
- 1 ½oz. bottle Iodeol for sterilizing puncture area



- 1 Packet Silver Threads for the needle
- 1 Plated Tube-clip to regulate flow, workable with one hand
- 1 Glass stirring rod.
- 1 Glass Funnel for filtering
- 1 Packet Sterilized Cotton-wool

Price, complete as above, 37/6
(Special Platinum Needle 8/6 extra)

RECURRENT FEVER
SYPHILIS

GALYL

FRAMBŒSIA AND
SLEEPING SICKNESS

Forms

FOR INTRAVENOUS INJECTIONS — (Fig 1)

(1) **DILUTE** —GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate sterile distilled water only being used for the dissolution

(2) **CONCENTRATED** —A special outfit containing one dose GALYL one ampoule sterilized solution and one small filter is supplied

DOSES
0 10—0 15—0 20—0 25—0 30—0 35—0 40

(3) FOR INTRAMUSCULAR INJECTIONS

GALYL is supplied in **OILY EMULSION**

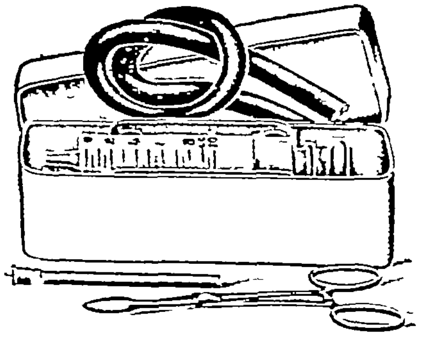
DOSES
0 10—0 15—0 20—0 30—0·40

LITERATURE AND CLINICAL REPORTS ON REQUEST

POCKET CASE.

Containing the entire instruments (sterilizable) necessary for administering a concentrated intravenous injection of GALYL or other solution —

- 1 Indiarubber tube for constricting the arm
- 1 Clamp for fixing the rubber band
- 1 Glass Syringe of 10 c c. capacity



- 1 Platinum iridium Needle, length 4 cm diameter 0·9, with short bevelled joint and special barrel Attachable to the syringe without any additional junction.
- 1 Nickel plated Case to hold all the above
- 1 Chamois Leather Pouch.
- 1 Glass Filtering Tube with rubber attachment

Price complete - - - - 30/-

THE ANGLO FRENCH DRUG CO LTD GAMAGE BUILDING HOLBORN LONDON E.C 1
Telephone: Holborn 1311
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A GREAT ADVANCE IN THE TREATMENT OF BURNS

SLIGHT or SEVERE.

BURNS
VARICOSE ULCERS
RHEUMATISM
NEURITIS

AMBRINE

GOUT
NEURALGIA
CHILBLAINS
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(The only Authorised Preparation of Dr Barthe de Sandfort Various Imitations compel us to make this statement)

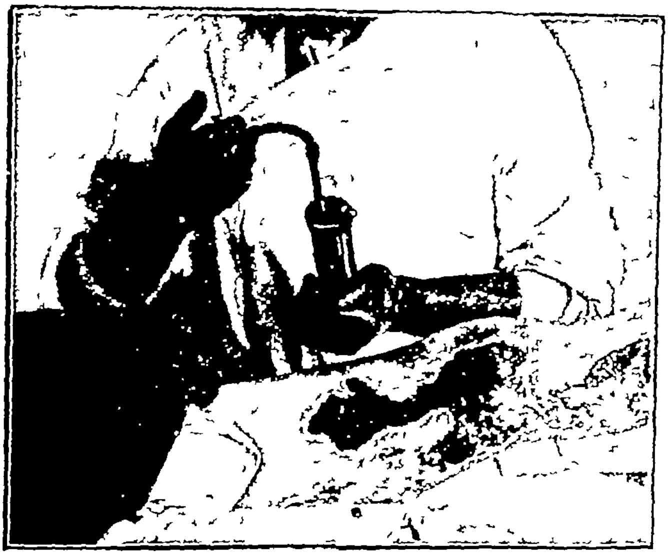
AMBRINE instantly alleviates pain, promotes rapid healing, forms a sure Protection against Infection of the Wound

Although the dressing with AMBRINE is occlusive and adhesive, it becomes after a short period non-adhesive, and can be removed without pain, hæmorrhage, or injury to the newly forming tissues The healing *takes place without leaving scars or contraction*

The BRITISH MEDICAL JOURNAL,
Sept 2nd, 1916 —

Re AMBRINE TREATMENT

" The primary and quite incontestable advantages of the treatment are two: it is agreeable to the patient, because entirely painless it is convenient to the *surgeon* because easily and quickly applied It is possible that the treatment would be useful in dealing with ordinary ulcers and in any *case it is certain that the* study of its application to the raw surfaces is worth pursuing



THE LANCET,
June 10th, 1916 —

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS

Attention is being drawn *to the remarkable success of* the Ambrine Wax treatment now being used at the Hôpital St. Nicolas at Issy-les Moulineaux for burns *frozen* feet and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means The *Minister of War* in reply to the Deputy M Mons as to why in view of the marvellous results *obtained by treating* burns and frost bites with Ambrine at the Hôpital St *Nicolas, all the soldiers suffer*ing from such wounds were not sent there, stated that this was being done as far as possible "

The most efficient means and method of ensuring active **Hyperthermal-Therapy** to the practical treatment of **Rheumatism, Gout, Arthritis, Neuralgia,** and similar affections

May be applied with camel hair brush, but our specially designed spray greatly facilitates the application of Ambrine, especially in the case of deep wounds or extensive surfaces

---

RATIONAL TREATMENT OF CONSTIPATION

By the double action of secretions and peristalsis

OPOLAXYL

Opolaxyl is a combination of the secretions of the liver (biliary), pancreas and intestines, with vegetable extract of a non drastic nature

It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen with their hæmatopoietic and antitoxic properties

It is a normal regulator of the gastro intestinal functions, consequently it improves the metabolic exchanges in the entire organism

Opolaxyl *does not* lose its efficacy by prolonged use, its effect is gentle and constant without irritation It is not merely purgative, it stimulates the defective organs and *revives* the normal equilibrium, it has a lasting effect because it restores the organs, thus correcting diminutional function

Opolaxyl is put up in small size tabular *form* easy to swallow, and *should* be *swallowed* without crunching at bedtime or before breakfast.

DOSE —For obstinate constipation 2 or 3 tablets afterwards 1 tablet every 3 or 4 days for a month

SAMPLES ON REQUEST *LITERATURE ON APPLICATION*

THE ANGLO-FRENCH DRUG CO, LTD GAMAGE BUILDING, HOLBORN, LONDON, E C 1
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THE LANCET.

LONDON SATURDAY SEPTEMBER 8, 1917

The Etiology of Some Obscure War Diseases

THE association between war and pestilence is proverbial, and it is one of the triumphs of medicine that in this greatest of wars we have been spared grave epidemics A comparison between the mortality from wounds and disease in this war and in the South African War gives a measure of the unchallenged advance of preventive medicine But fresh forms of disease have called for increasing vigilance and research Some of these have been widespread, yet of low mortality—for instance, epidemic nephritis, almost unknown in warfare, except in the American Civil War, has been prevalent in France, though absent from the British training camps The immediate death rate of this nephritis has been small, but it is too early yet to gauge the ultimate damage which has been accomplished by the disease Probably it is due to an infection, but, unfortunately, the organism is still unknown, and while this is so no effective means of prevention can be adopted In spite of this there is good ground for believing that, as in the later phases of the American Civil War, epidemic nephritis is gradually diminishing In every war indeterminate fevers have abounded In South Africa we heard much of "simple continued fever," which in the majority of cases was probably merely a mild form of typhoid fever, for in uninoculated patients the Widal reaction was generally found to be positive The absence of this type of simple continued fever now is correlated with the control that has been acquired over typhoid fever and its congeners But from the medley of irregular pyrexias, myalgias, rheumatisms, and "influenza" the features of a definite disease have been gradually recognised and labelled trench fever The headache, drowsiness, and pains in the shins were associated with a relapsing fever, the course of which suggested the activity of a hæmatozoon. The work of Captain J W McNEE and Lieutenant A RENSHAW[1] showed that there was something in the red corpuscle of infected persons which was capable of conveying the disease to others, but no actual organism was found, although the punctate basophilia found was the subject of remark On another page we print an interesting and important communication from Captain LYN DIMOND which points to the presence of a hæmogregarine as the cause of this form of relapsing fever The blood from cases of trench fever was hæmolysed by the addition of a saponin, after which the parasite could be found moving in the centrifugalised deposit The hæmogregarine was also discovered in the liver, and less constantly in the spleen and lung, rarely in the lymphatic glands and not in the cerebro spinal fluid Spleen puncture was found to be the quickest way to establish the diagnosis The broad facts of the life cycle of the parasite appear to be established A day or two before the onset of pyrexia macromerozoites are found free in the plasma of venous blood, and micromerozoites, which are more commonly encysted These merozoites increase in number up to the height of the fever when they disappear, and the day after the pyrexia only the parthenogenetic macrogamatocyte can be found, which undergoes division into 20 macromerozoites just before the rise of temperature, when sporulation occurs This is the asexual generation, but the main features of the sexual generation have also been observed

If further investigation confirms the suggestion that the protozoon of trench fever is a hæmogregarine, it becomes highly probable that either the *Pediculus corporis* or a louse allied to the one parasitic on the Indian field rat, is the carrier of the protozoon The association of this fever with trench life, where large numbers of rats come into close association with the troops, favours this conclusion Trench fever is not dangerous to life, but it is a cause of considerable suffering and much incapacity It is probably one of the various infections and intoxications which lead to disordered action of the heart, and thus is responsible for much prolonged disablement Its effective treatment is accordingly a matter of much importance, and so far nothing has been found to cut short its course The case recorded by Dr R V SOLLY in another column in which the character of the fever raised a suspicion of trench fever, was cut short by a single dose of galyl, although other observers have had negative results with the same drug Special interest therefore attaches to Captain DIMOND s observation that trypaflavine slows the movements of the parasite *in vitro*, and has given good clinical results when administered intravenously The growth of our knowledge of trench fever is a typical example of the steps by which such problems are solved Similar steps are well illustrated in our knowledge of certain nervous diseases For instance, "locomotor ataxy" describes a symptom, "tabes dorsalis" correlates this with an anatomical lesion But a great advance was made when this lesion was traced to a parenchymatous degeneration of the lower sensory neuron produced by syphilis In trench fever the stages have been the recognition of certain scattered symptoms as due to some common cause—then the recognition of this cause as a specific infection, and, finally, the identification of the responsible parasite It emphasises, again, the importance of studying the etiology of disease and the way in which the centre of interest is shifting from the wards to the laboratory

This is further brought out by another paper in our present issue on a form of purulent bronchitis by Captain A ABRAHAMS and others We previously published a communication on this subject from one of our base hospitals in France, so that the disease is evidently widespread.

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[1] B R Med Jour 1915 i 225

similar reproach In America, and probably also in Japan, a more impartial view is obtained of the medical productions of Europe in general As in France, so here the scientific habit of mind has not run to the production of a Central blatt In this country only the *Journal of the Chemical Society* has carried out anything like a systematic abstraction of the scientific work of all countries in its own department of science It is a work which cannot be left to a few diligent but limited officials, but requires the close attention of the foremost intellects of the scientific world, and it is, we believe, on these lines that the chemical abstracting is done The unwisdom of refusing to recognise credit where credit is due is accepted by the Chemical Society, and appears in the fact that the excerpts from German chemical literature are as complete and as carefully done as they have ever been Non tendencious abstracting requires a generous mind as well as a wide knowledge of the subject in hand, and is justified in the long run by the confidence of fair minded readers Medicine deserves an inclusive compilation on similar lines International conferences and the like have in recent years rendered the medical and surgical practice of civilised countries, if not uniform, at all events capable of expression in common terms It should not be outside the genius of a capable body of medical abstractors to condense with fairness and impartiality the main foreign scientific work, and in so doing to detect originality at an early stage and indicate fruitful lines for others to follow up Originality is doubtless not less exceptional in medicine than in other faculties, but enterprise may not have been as carefully cultivated, and in the *lutte scientifique* which Professor LENOSSIER assures us is to follow the war this quality will stand us, too, in good stead

Annotations

'Ne quid nimis.'

SCIENTIFIC AND INDUSTRIAL RESEARCH

THE Report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1916-17 was issued last week, and in it the Advisory Council state 'We have made progress The establishment in December last of a separate Department of State entrusted with the organisation of scientific and industrial research has brought encouragement to the efforts of the Committee and the necessary financial support Progress however is admittedly slow, for the calls of war continually grow and the numbers available for other work, though important, continually shrink During the year the members of the Council have addressed themselves in the main to the organisation of industrial research firstly because they felt the paramount importance of arousing and securing the interest of manufacturers in the application of science to industry and secondly because the influence of the war has created in industry an atmosphere conducive to the growth of new ideas, while it has also impeded the prosecution of work in pure science. In the first part of the report the Council allude to the steps which they have been able to take during the past year to organise a systematic approach to the problem of industrial research on a coöperative basis wherever this method of finance is practicable, the State Department itself helping in those important fields of work which call for independent State action The report discusses the necessary part played by surveys in the work of research, as well as the limits within which the responsibility for them should rest with the *Department*, evidently the position has been carefully considered In the second part of the report the progress made in a number of sporadic investigations aided and initiated by the Department is described After the war the number of research workers both in pure science and technology will in all probability be greatly increased, and it is good to learn that the best means of encouraging inventors and aiding individual manufacturers are receiving the attention of the Committee

WOUNDS OF THE CHEST WALL AND LUNG

APART from a simple thoracotomy, the surgery of the chest has been until recently hardly more than the occasional task of the specialist, and the whole region of intrathoracic operation was summed up not long ago in a treatise of no great size by two specialist surgeons of Bonn There has been a not unnatural hesitation in interfering at close quarters with the central mechanism of circulation and respiration, and only extreme urgency has induced the general surgeon to handle the lung in exceptional cases But the rifle bullet and the shell fragment have had no such fine feeling, and where they lead the surgeon must follow, with the result that a new chapter in war surgery is being written. Obviously a large proportion of shell wounds of the chest are likely to be immediately fatal from shock or hæmorrhage before any kind of help is available On the other hand, perforation of the chest and lung by a high velocity rifle bullet may be a very simple affair But between these extremes there has been opened up a wide field in which the skill and discrimination of the surgeon counts for much, and we welcome the important contribution to the subject by Lieut Colonel T R Elliott, which we publish at the front of this issue Colonel Elliott deals in the first half of his paper with the after histories in the United Kingdom of 170 cases of chest wound seen by himself during the first two years of war at a base hospital in France These patients were transferred to England generally in the third week after their injury, and having arrived safely at this stage, they practically all survived, and in a very large proportion of cases were able to resume duty again within a few months In the absence of sepsis—that is to say, in about three quarters of the cases—the results appear to justify neither the removal of a retained projectile nor the tapping of a hæmothorax unless of large size These points are suggestive and demand confirmation The second part of Colonel Elliott s analysis dealing with the mortality among chest wounds in France, records the experiences of French as well as of English surgeons, amongst whom he specially mentions Dr Pierre Duval, officer in charge of Auto ch r (i e , Ambulance Chirurgicale Automobile) No 21, whose monograph on "Les Plaies de Guerre du Poumon ' has just been published by Masson et Cie, Paris Colonel Elliott states that the impression

Unfortunately the mortality is high—of the cases reported from France the death rate when the epidemic was most severe was 45 per cent, while that of the Aldershot cases was 25 per cent The chief clinical features would appear to be the characteristic expectoration of yellowish green masses of pus which may be the first symptom, the rapid respirations, the extreme tachycardia, the marked cyanosis, and an ante mortem drop of temperature, an evidence of the extreme toxæmia The morbid anatomy of the lung shows the bronchioles to be completely obstructed with pus, catarrhal cells, and débris, with small round cell infiltration immediately surrounding them The alveoli are usually very little affected, and though there may be a secondary broncho pneumonia this is not characteristic of the disease The other lesions found are evidences of toxæmia and of failure of the right side of the heart Treatment has not been satisfactory The early recognition of the case by the character of the sputum is of primary importance, for if the patient is allowed to struggle against the disease at the beginning the outlook is made much worse If cyanosis supervenes the prognosis is grave Both sets of observers are agreed as to the etiology of the disease—it is primarily influenzal—Pfeiffer's bacillus seems to be constantly present But there is usually a mixed infection, pneumococci being the organism most frequently associated with the influenza bacillus It may be asked why, with two such well recognised organisms, should we meet with a new and dangerous form of bronchitis? The suggestion is that it is an example of exaltation of virulence by symbiosis The pneumococci found in the earlier stages are of low virulence, but the two organisms stimulate the virulence of each other, and the fatal termination is by a pneumococcal septicæmia. So that the symptom of an "acute suffocative catarrh" is traced to an obstruction of the bronchioles by purulent exudate with peri bronchial infiltration as its anatomical basis, and this in its turn is traced to a double infection, apparently with true symbiosis Certainly investigations of the etiological factor in these two diseases, trench fever and purulent bronchitis, have yielded results full of interest and promise

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Originality and Enterprise the Value of Publicity

IN an article on the opening page of the *Paris Medical*, which is so usefully given up to a broad presentment of current topics, Professor G LENOSSIER, of Lyons, discusses the relationship of French science, and especially of medical science, to the outside world France, he says in effect, is not making that impression on contemporary science or contemporary medicine which is fairly due to her originality French scientific work is annexed on its appearance by groups of workers who diligently follow it up on the lines of the originator without giving him the credit to which he is entitled, and who often, indeed, find some defunct Herr Professor on whom the posthumous honour of the discovery is laid For every five French men who do original work Professor LENOSSIE complains that there are one hundred Germa who accumulate documents The Central Empir are the home and have a monopoly of the Centra blatt to which all the world turns for a summary original work wherein, with immense diligen and a little bluff, Germany is enabled to take cred for vast scientific production and for conferring the rest of an admiring world the hygienic a scientific blessings enjoyed by the Fatherland number of French journals, Professor LENOSSI tells us, have replied by ceasing themselves to pri abstracts of German articles In this ostrich li course he sees only a poor imitation of the metho of the adversary, preferring himself rather dispense both with obscurantism and bluff, and to organise the home scientific army as to car a frank and honest campaign over into ener territory, to that enemy's discomfiture and t approval of onlooking neutrals

And this course French medicine and surge have been taking to some effect in the publicati of an admirable series of war monographs in t Horizon Collection, the dissemination of whi among the English speaking people of Europe a America has been assured by the translations p pared by the University of London Press under t general editorship of SIR ALFRED KEOGH T views expressed are those of first rate Fren authorities, speaking from extensive practi knowledge which cannot fail to serve as a valua asset to the less experienced, enabling them derive the utmost value from the experien which will in time be theirs The predominat note of the series is the exhaustive, practical, up to date manner in which it is handled, along w a clearness of view and logical sequence of thou eminently characteristic of the French genius Gr as have been the advances through all departme in enterprise and activity during the war, the progr made by the medical branch may fairly challe comparison with that in any other, and among assistance rendered by our great ally to the comm cause SIR ALFRED KEOGH finds this brilliant con bution to professional knowledge by no me the least Here then is propaganda in Profes LENOSSIER'S sense—the ensuring of wide publi to work of talent and promise, done for the furth ing of the object in view and not with any alte motive These admirable monographs, many which we have already briefly reviewed, will acc pany the military physician and surgeon now when he returns to his peaceful pursuits, and names of the authors will remain fixed in memory Such honest and effective propaga can hardly miss its mark

But the idea of the *Central* blatt, or respons and inclusive abstraction of contributions references and bibliography, is in itself n bad one Those who read German medical b are constantly struck by the fact that refere are almost exclusively made to German work when others are included the reference is indi through abstracts made in one or other of the principal German medical journals Our medical literature is by no means free fro similar reproach In America, and probably also in Japan, a more impartial view is obtained of the medical productions of Europe in general As in France, so here, the scientific habit of mind has not run to the production of a Central blatt In this country only the *Journal of the Chemical Society* has carried out anything like a systematic abstraction of the scientific work of all countries in its own department of science It is a work which cannot be left to a few diligent but limited officials, but requires the close attention of the foremost intellects of the scientific world, and it is, we believe, on these lines that the chemical abstracting is done The unwisdom of refusing to recognise credit where credit is due is accepted by the Chemical Society, and appears in the fact that the excerpts from German chemical literature are as complete and as carefully done as they have ever been Non tendencious abstracting requires a generous mind as well as a wide knowledge of the subject in hand, and is justified in the long run by the confidence of fair minded readers Medicine deserves an inclusive compilation on similar lines International conferences and the like have in recent years rendered the medical and surgical practice of civilised countries, if not uniform, at all events capable of expression in common terms It should not be outside the genius of a capable body of medical abstractors to condense with fairness and impartiality the main foreign scientific work, and in so doing to detect originality at an early stage and indicate fruitful lines for others to follow up Originality is doubtless not less exceptional in medicine than in other faculties, but enterprise may not have been as carefully cultivated, and in the *lutte scientifique* which Professor LENOSSIER assures us is to follow the war this quality will stand us, too, in good stead

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THE MEDICAL EXAMINATION OF AVIATORS FOR THE AMERICAN ARMY

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MIGRATION OF PROJECTILES IN THE BLOOD STREAM

WE recorded recently[1] a case, reported by an American surgeon in France, of the migration of a fragment of shell from the femoral vein to the right ventricle The condition remained unsuspected until the autopsy The story has been capped by Dr Specht surgeon to a German military hospital, who found[2] a shell fragment in the *left* ventricle at the autopsy on a man who died of sepsis after a deep wound of the thigh In this case the foramen ovale was widely open and the fragment must have passed through the aperture to the position beneath the flap of the mitral valve where it was found The man lived ten days after his injury but no symptom whatever had pointed to any involvement of the heart Dr A Rudolf Jaffe assistant surgeon at the same hospital, relates a series of interesting cases from German literature of which the most remarkable was recorded by Freund and Caspersohn, who removed from the lumen of the right ventricle a shrapnel ball 13 mm in diameter In this case, although the wound was situated at the edge of the right costal arch in the nipple line, and the projectile might therefore have entered the right ventricle directly, the surgeons found no sign of wound of the heart wall nor effusion into the pericardium, and concluded that the ball had entered the vena cava, thus reaching the ventricle indirectly As the patient recovered no opportunity offered for verification of this assumption Jaffe adds a case observed by himself, in which a Russian rifle bullet, wounding the pelvis near the posterior spine of the ilium, entered the inferior vena cava and was carried thence to the right ventricle, where it was found at the autopsy lying beneath a flap of the tricuspid valve No thrombus was present, but the endocardium and valve were swollen and blood stained In this case the patient had complained during life of pain over the heart The occurrence of free projectiles in the blood stream, although doubtless very rare, has already become something more than a surgical curiosity, and its possibility may well be borne in mind by those who observe anomalous symptoms after gunshot wounds, especially when the projectile is not found

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[1] THE LANCET 1917 i 542.

[2] Münch med Wochens 1917 i 823

POISONING BY CYANIDE GAS

POISONING by hydrocyanic acid taken by the mouth is a common occurrence, but the recorded cases of poisoning by hydrocyanic acid gas are few The latter danger is, however, gaining in importance in view of the introduction by the U S Public Health Service of cyanide gas for ridding ships of parasites, including rats and fleas[1] In the *Medical Journal of Australia* Dr A M McIntosh has reported a case which may serve as a warning against the use of this method without extreme precaution Some rooms in Brisbane were fumigated by cyanide gas under the supervision of a chemist experienced in this work A small room of 1300 cubic feet was being treated The cyanide was placed in a dish, the water and sulphuric acid mixed, and the mixture poured on to the cyanide The room had previously been sealed, excepting one door for exit, and the addition of the fluid to the cyanide caused a great evolution of gas, with the result that the operator inhaled sufficient of it to make him dizzy He immediately dashed from the room and called to his assistant to close the door and seal it up Assistance was summoned and, on arrival, it was found that he had quite recovered from the effects of his inhalation, but when the room was visited the assistant was seen lying on the floor unconscious, with his head near the dish containing the cyanide This was about three minutes after the principal had left the room The assistant was quite unconscious, his breathing had stopped, his pulse could not be felt, and he had lost his corneal reflex He was hurriedly pulled out of the room and carried into the open air Under artificial respiration he began to breathe, at first slowly, oxygen was administered and strychnine sulphate, gr 1/20 hypodermically When discovered his face was very pale, later it became more pink than normal His breathing, at first 6 to the minute, gradually increased to normal rate and was stertorous His pulse gradually became stronger and his corneal reflex returned A pinkish, frothy mucus collected in his mouth, and necessitated constant cleaning out of the throat for some two hours He was given a hypodermic injection of atropine sulphate (gr 1/100) with the is gaining ground that chest wounds are more fatal than was at first supposed Whatever this mortality may be, the deaths almost all occur in the first month No figures, he says, have been collected for deaths from hæmorrhage and severe injury in our field ambulances, but it is probable that 10–15 per cent may die in medical units from the severity of their injury and a further 10 per cent at the casualty clearing station from complicating sepsis Médecin chef Duval, from an analysis of nearly 3500 hospital cases, agrees in giving the general mortality at 20 per cent, reaching 25 per cent or more of the cases retained at the *postes de secours* The first day accounts for at least a third of the deaths, the first and second for nearly two thirds Both observers find the mortality largely influenced by the nature of the projectile, for the battles of the Somme Duval places the percentage death rate for rifle bullets at 5–15, for other missiles 25 Lung wounds with a closed chest wall were fatal in 15, with an open wound in 27 per cent of cases Both the French and English authorities recommend an early cleansing operation as a preventive measure against the appallingly high death rate of infected chest wounds treated conservatively Colonel Elliott mentions two surgeons whose pioneer work has already shown that these thoracic operations are practicable under military conditions in the field Médecin chef Duval suggests, as an alternative, rushing the cases down to the clearing station after applying a simple occlusive dressing, his book contains a full exposition of the methods he uses, and of recovery in cases which might well have been considered hopeless This chapter of war surgery is as promising in its possible results as it is new and fascinating in its practice

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[1] THE LANCET 1916 ii 950

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Lieutenant Colonel W Watkins Pitchford, S A M C, Director of the South African Institute for Medical Research, whose observations are published in the *Medical Journal of South Africa*. From their paper it appears that the severe prevalence of malaria among the Union troops returning to Johannesburg from German East Africa offered opportunities for giving a trial to Rogers's method of treatment, and to the possibility of freeing malaria carrying convalescents from the resistant gametocyte forms of the parasite. These experts treated all cases of crescent infection with tartar emetic injections,[1] and in their paper they publish the outline case histories of the first 25 patients. Combined with the tartar emetic given intravenously, quinine in doses of from 10 to 15 grains was administered by the mouth. They state that their results appear to confirm the suggestion of Rogers that tartar emetic when administered intravenously leads to a disappearance of the gametocytes of subtertian malaria, but the treatment has no marked effect upon the trophozoites of this parasite, nor upon those of benign tertian. Their observations do not permit them to express any opinion as to the influence of the drug upon the gametocyte stages of other than the subtertian parasite. The generally recognised resistance of crescents to quinine, they remark, was well illustrated in several of their cases. That these crescents are susceptible to the action of tartar emetic injections is suggested not only by the fact of their disappearance but also by the detection of broken up forms in certain instances. Owing to the demand for beds in the Wanderers' Hospital, where the malarial cases were treated, it was necessary to discharge the men as soon as their recovery seemed reasonably complete. This necessity, unfortunately, restricted the number of consecutive and negative blood examinations which could be obtained before discharge. In many instances the total number of examinations was considerably less than would have been made if more assistance had been available.

THE TRAINING AND SUPPLY OF MIDWIVES

A LARGE and increasing proportion of births among the poorer classes—almost three quarters of the total—are attended by midwives. Happily, the vast majority of births take place without any untoward incident, but childbirth, although a perfectly natural process, is, like other natural processes, liable to accidents, perversions, and sudden emergencies, most of which are easily remedied or averted if recognised and taken in time and provided skilled control is available, but which may be destructive to mother and child alike if the necessary skilled assistance is unavailable, or when meddlesome or ignorant interference is substituted for it. How the midwife is to be fitted to render this skilled assistance was the theme of a memorandum presented by Dr E W Hope, medical officer of health for Liverpool, at the recent annual meeting of the Association for Promoting the Training and Supply of Midwives, and now reprinted in pamphlet form.[1] Dr Hope has long been well known for his effective presentation of the view that the midwife is an essential factor in every scheme affecting the welfare of maternity and infancy, and that her potentialities must be recognised and applied to the best purpose if such schemes are to command success. The need for a raised standard of midwifery skill is evident in the records of the gynæcological wards of any hospital, and the midwife's influence does not end with the confinement. Attending as she does upon the mother and the baby for a period of not less than 10 days, her influence may be of the utmost consequence in obtaining treatment for the sequelæ of venereal disease, and thus ensuring that a succession of miscarriages and stillbirths shall give place to the birth of living and healthy children. Dr Hope touched in his address on the question of the class from which the midwife is recruited, speculating on what induces her to enter upon a calling involving much work for little reward. Some, he finds, have a vocation for midwifery, some, perhaps 15–20 per cent, have succeeded to a practice from the mother, others take it as the only means they know of earning a few pounds. A fairly large proportion of married women take up midwifery in order to meet increasing domestic expenses caused by additions to their own families. The economic result is summarised in a sentence:- It is hardly possible under existing circumstances for a reasonable livelihood to be earned by midwives. Dr Hope queries whether the need for the midwife is likely to diminish owing to the attendance in the future by medical practitioners of all maternity cases and the provision of hospital establishments to obviate the necessity for births taking place in the undesirable homes of the patients. He concludes that there is not the least possibility of either of these things happening. With progressive housing operations homes will not be so undesirable, and in any case hospitals are never likely to meet the needs. There never have been enough doctors to go round in many populous English centres, however overstocked the ranks of the profession have been in more favoured localities, and to the usual wastage must be added the loss of those who have fallen in the war and the sapping of the normal supply at its source. Recognising, then, that the midwife is essential, Dr Hope sees the solution of the problem of supply in a free or subsidised vocational training of perhaps two years, as is already the case in France and Denmark, a terminal examination to give evidence of fitness to practise, followed by a guarantee of a livelihood by means of a payment over and above the fee received from each patient. The subsidised and trained midwife would be expected to undertake practice wherever she was sent, but by the method of subsidising a free choice would still be left to her clients, whilst there would be no inducement to her to shirk nor to undersell. The cost of such a scheme to the Exchequer is estimated by Dr Hope as between £80,000 and £100,000 per year. He commended the consideration of some proposal of this kind to the Association as a piece of constructive policy, and it will be a matter of regret if serious thought is not directed to these very reasonable propositions.

THE National Health Insurance Commissioners have made regulations establishing arrangements for treatment by medical practitioners of all sailors and soldiers (including those who are uninsured) invalided from service with the Forces. These arrangements provide special facilities whereby such men can obtain the services of a doctor without delay immediately upon discharge, and they also include special provision for the treatment in sanatoria of discharged men suffering from tuberculosis. We have dealt elsewhere with the official notifications.

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[1] Liverpool C Tinling and Co

result that the exudation was greatly checked The *temperature* was now about normal, the face slightly flushed, and the respiration continued laboured and stertorous All his limbs were flaccid, urine and fæces were passed involuntarily, and the pupil reacted sluggishly to light Later in the afternoon general convulsive seizures began, closely resembling those of tetanus, with a typical risus sardonicus They lasted about five minutes, and recurred at intervals of 10 minutes He was given two injections of morphine, 1/4 gr in all This somewhat diminished the violence and frequency of the convulsive seizures Next day the patient could swallow a little and was given brandy and water at intervals He was still passing urine in the bed On this day the spasms were much less frequent and severe Lumbar puncture was performed, 14 c c of normal fluid being withdrawn under slightly increased pressure The Babinski reflex was positive on both sides The knee jerks were very sluggish, there was no ankle clonus Towards evening the breathing became more and more stertorous He was very restless during the night, moaning at intervals, the spasms also occurred with greater frequency The urine was found to contain a considerable amount of pus, but no trace of hydrocyanic acid On the succeeding days the spasms recurred with less frequency and of diminishing severity During the spasms he moaned as if in pain The *temperature* gradually rose, the heart was normal throughout A short time before death some moist sounds were heard at the bases of the lungs The pulse became much weaker and the patient died 110 hours after inhalation of gas The temperature rose to 106° F before death. The necropsy showed a slight congestion of the cerebral convolutions and pyelitis due to old gonorrhœal infection Some of the blood was submitted to the Government analyst, who was unable to find the slightest trace of hydrocyanic acid or any of its compounds

THE LIMIT OF SAFETY OF LEAD IN WATER-SUPPLIES

IN an interesting note which we have received from Dr John C Thresh, medical officer of health of the Essex County Council, he points out that it is not generally known that certain natural waters contain traces of lead in solution. As far as his experience extends these waters are always derived from mountain limestone in neighbourhoods where veins of galena are met with The amount of lead varies between 1 part in 12½ millions and 1 part in 25 millions, equivalent to 1/178th and 1/357th of a grain per gallon of water Dr Thresh quotes several authorities on the question of the limit of safety for the lead content of a potable water, who conclude in general that a water containing 1/100th part of a grain per gallon or even 1/300th part of a grain might be injurious to health, but he suggests grave reasons for doubting whether such a conclusion is correct The amount of lead shown on a single sample may, likely enough, be far below the average amount found in the water, and in one of Dr Thresh's cases the water often contained 1/5th grain of lead per gallon These *observations* refer apparently to waters which had taken up lead in passing through service pipes, and such waters may at one time contain even less than 1/300th of a grain per gallon, yet at others may contain even as much as 1 grain per gallon On the basis of a daily intake for drinking purposes of 3 pints of water, a person would consume 137 gallons per annum, and hence to ingest 1 grain of lead from a water containing 1/100th of a grain per gallon the consumer would have to drink at this rate for nine months, or for over two years if the water only contained 1/300th of a grain per gallon Dr Thresh observes that the kidneys of any individual adult or child which could not eliminate the metal at this rate would be in such a condition that he would be unlikely to live long enough to accumulate a poisonous dose of the metal, and he quotes Sir William Osler to the effect that "lead is rapidly eliminated by kidneys and skin," and that "children are relatively less liable and females more liable to suffer from lead poisoning than men" In Dr Thresh's opinion, when a natural *hard* water contains lead in a less proportion than 1 in 5 millions it may be passed as being practically free from lead and perfectly wholesome so far as the lead contents are concerned In the case of *soft* waters which take up lead from supply pipes he does not think it would be wise to pass a water containing 1 part per million, unless it was perfectly certain that the water was being so treated that this amount was never exceeded There is to be reckoned with also the possibility of a natural hard water carrying from time to time particles of sinter containing lead in suspension As is pointed out, in the neighbourhood of lead mines, used or disused, it is not unusual for cattle to be poisoned by lead Such lead does not appear to be in solution but in suspension, which is removed by careful filtration In one instance in a spring water Dr Thresh found 1 part of lead in 5 millions, but after filtration it only amounted to 1 part in 25 millions

INTRAVENOUS INJECTIONS OF TARTAR EMETIC IN MALARIA

THE recent observations of Sir Leonard Rogers
in Calcutta showed that in certain malarial cases
malignant tertian crescents disappeared from th
blood after the use of intravenous injections
tartar emetic, and also that the same method
treatment was effective in cases of benign tert
infection He suggested that quinine should
employed to check the malarial paroxysm, w
tartar emetic should subsequently be used
venously in order to destroy, if possible, the
corpuscular stages of the parasites—that
crescents of subtertian and the corresp
resisting forms of other types—thus pr
relapses and greatly reducing the infectio
the patient to malaria-bearing mosqui
methods of Sir Leonard Rogers have
other experts, but not always with the
G C Low and H B Newham, of the L
of Tropical Medicine, have placed on
in which tartar emetic, although
and more numerous doses than
by Rogers, failed to have any
rings or crescents Professor J
Liverpool, in coöperation with
has also made trial of this me
but came to the conclusion that
tions of tartar emetic did not in
disappearance from the perip
stage of the malarial parasite
or *P falciparum*, nor did thes
either the rigors or the fever
A more recent contribution
supplied from South *Africa*
Orenstein, S A M C, medical
of the Wanderers' Hospital,

question does not fall within the scope of this study, nor can any attempt be made here to deal with difficulties which may possibly arise from the use of Greek words through the medium of Latin

In many cases, then, the meaning of a name is of importance, only in so far as it ensures shortness and simplicity It is quite otherwise with names of relation, in which the meaning of the name may be instructive, e.g , os frontale, os temporale, os coccygis os ischii (It will be noticed that the B N A. employs either the genitive or the adjective, but the former is certainly the more vivid, e.g , os frontis, os temporis, and it also simplifies the names of related structures)

II —*The Direct Method illustrated in the Naming of the Bones and Cartilages*

Just as the bones are the framework upon which the whole body is built up, so the names of the bones are the framework of all anatomical nomenclature. Other structures and parts of the body may be named from the bones and in some cases the bones are named from the region in which they are found Often however a bone must be named on some entirely different principle, such as from its function as in the case of the atlas and axis vertebræ or from its physical resemblance to some object such as a boat plough sieve wedge cube and so on It is natural then in considering the principle enumerated above, to make a rapid survey of the names of the bones with which the cartilages may well be included

1 *Names of Complete Bones and Cartilages* —In naming a bone from its physical resemblance to some object the B N A adopts two methods

(A.) *The direct method* —In the direct method the bone is called by the actual name of the object which it is supposed to resemble, and it must of course be named after one object only If the resemblance is marked so much the better but at least the name is *short and simple* and the genitive case and adjective are easily formed, as is well seen in the following examples —

B N A	*Genitive*	*Adjective.*	*Meaning*
Vomer	Vomeris	Vomerinus.	Plough
Radius	Radii	Radialis	Spoke
Fibula	Fibulæ	Fibularis	Brooch pin
Patella.	Patellæ	Patellaris.	Limpet
Malleus	Mallei	Mallealis	Hammer
Incus	Incudis	Incudalis	Anvil
Stapes	Stapedis	Stapedius.	Stirrup

(B) *The indirect method* —In the indirect method the name is formed by combining the word os bone with an adjective expressing the resemblance e.g —

B N A	*Meaning*
Os naviculare	Navicular or boat-shaped bone.
Os lunatum	Lunate or moon-shaped bone.
Os pisiforme	Pisiform or pea shaped bone
Os cuboideum	Cuboid or cube-shaped bone.
Os ethmoidale	Ethmoidal or sieve-shaped bone

The indirect is the inferior method, since the name is longer the genitive is clumsy, and the adjective is always some sort of a compromise e g —

B N A	*Direct*	*Meaning*
1 Os naviculare Ossis navicularis Navicularis	1 Navicula Naviculæ Navicularis	1 Boat
2. Os lunatum Ossis lunati Lunatus	2. Luna Lunæ Lunaris	2 Moon
3 Os pisiforme Ossis pisiformis Pisiformis	3 Pisum Pisi Pisalis	3. Pea.
4 Os cuboideum Ossis cuboidei Cuboideus	4 Cubus Cubi Cubalis	4 Cube
5 Os ethmoidale Ossis ethmoidalis Ethmoidalis	5 Ethmus Ethmi Ethmalis	5 Sieve
6 Os cuneiforme Ossis cuneiformis Cuneiformi	6 Cuneus Cunei Cunealis	6 Wedge
7 Os sphenoidale Ossis sphenoidalis Sphenoidali	7 Sphen Sphenis Sphenalis	7 Wedge
8 Os sesamoideum Ossis sesamoidei Sesamoideus	8 Sesame Sesamæ Sesamalis	8 Sesame
9 Cartilago thyreoidea Cartilaginis thyreoideæ Thyreoideus	9 Thyreus Thyrei Thyrealis.	9 Shield
10 Cartilago cricoidea Cartilaginis cricoideæ Cricoideus	10 Cricus Crici Cricalis	10 Signet ring
11 Cartilago arytænoidea Cartilaginis arytænoideæ Arytænoideus	11 Arytæna Arytænæ Arytænalis	11 Jug
12 Cartilago triticea Cartilaginis triticeæ Triticeus	12 Triticum Tritici Triticalis	12 Wheat grain

2 *General Terms Applied to Parts of Bones and Cartilages* —In naming parts of bones and cartilages the B N A frequently employs the direct method and with excellent result e g —

B N A	*Meaning*	*B N A*	*Meaning*
Spina.	Spine.	Rostrum	Beak.
Dens	Tooth	Concha	Shell
Cornu	Horn	Ala.	Wing
Malleolus	Little hammer	Hamulus	Hooklet
Condylus	Knuckle	Cochlea.	Shell.
Corona.	Crown.	Jugum.	Ridge.
Caput	Head	Ramus	Branch
Squama	Scale	Collum	Neck.
Sella.	Saddle	Trochlea.	Pulley
Lingula.	Little tongue	Acetabulum	Cup

In the case of the second cervical vertebra the superiority of the B N A. term dens or tooth over the British odontoid process is obvious On the other hand, there are in the B N A. many failures, e g —

B N A	*Direct*	*Meaning*
Processus spinosus	Spina.	Spine
Processus mammillaris.	Mammilla	Nipple
Processus xiphoideus	Xiphus	Sword
Processus pterygoideus	Pteryx	Wing
Processus pyramidalis	Pyramis	Pyramid
Processus condyloideus	Condylus	Knuckle
Processus coronoideus	Corona.	Crown
Processus styloideus	Stylus	Style
Processus alaris	Ala	Wing
Processus coracoideus	Corax	Crow
Pars petrosa	Petra	Rock
Lamina cribrosa.	Cribrum	Sieve
Lamina papyracea	Papyru	Papyrus
Cavitas glenoidalis	Glene	Cup

3 *Complete Names of Parts of Bones and Cartilages* —The complete name of the part of a bone or cartilage consists of a general term combined with the name of the bone or cartilage itself The B N A does this at haphazard with either the genitive or the adjective, e g —

B N A with Genitive	*B N A with adjective*
Manubrium sterni	Planum sternale
Spina ossis sphenoidalis	Lingula sphenoidalis.

In all such combinations the genitive is to be preferred and direct forms should always be used In many instances the B N A. is eminently satisfactory, e g —

B N A	
Spina scapulæ	Condylus tibiæ
Trochlea femoris	Ala vomeris

More often perhaps the B N A fails, e g —

B N A	*Direct*
Processus spinosus vertebræ	Spina vertebræ
Processus condyloideus mandibulæ	Condylus mandibulæ
Processus xiphoideus sterni	Xiphus sterni
Processus pterygoideus ossis sphenoidalis	Pteryx sphenis
Processus coronoideus ulnæ	Corona ulnæ
Processus styloideus radii	Stylus radii
Processus alaris ossis ethmoidalis	Ala ethmi
Lamina cribrosa ossis ethmoidalis	Cribrum ethmi
Lamina papyracea ossis ethmoidalis	Papyrus ethmi
Cavitas glenoidalis scapulæ	Glene scapulæ

The names may be even more complex, e g (*a*) for a portion or part of a bone , (*b*) when part of a bone is in relation with some other structure, e g —

B N A	*Direct*
(*a*) Laminæ processus pterygoidei ossis sphenoidalis	Laminæ pterygis sphenis.
(*b*) Crista ethmoidalis maxillæ.	Crista ethmalis maxillæ
Facies cerebralis ossis sphenoidalis.	Facies cerebralis sphenis

4 *Names of Bones and Cartilages Employed in Forming Names for other Structures* —If the names of the bones were simple and short the names of many other structures could be shortened and simplified, e g —

B N A	*Direct*
Articulatio ossis pisiformis	Articulatio pisi
Articulatio calcaneocuboidea	Articulatio calcaneocubalis
Ligamentum cuboideonaviculare	Ligamentum cuboscaphale
Ligamentum navicularicuneiforme	Ligamentum scaphocuneale
Musculus thyreoarytænoideus	Musculus thyreoarytænalis
Musculus cricothyreoideus	Musculus cricothyrealis
Arteria thyreoidea	Arteria thyrealis.
Arteria ethmoidalis	Vena ethmalis
Vena chorioidea	Vena chorialis
Emissarium condyloideum	Emissarium condylare
Nervus pterygoideus	Nervus pterygalis
Nervus ethmoidalis	Nervus ethmalis
Cisternæ subarachnoidales	Cisternæ subarachnales

III —*The Direct Method as a General Principle in Anatomical Nomenclature*

If the principle that ‘Every name shall be descriptive and as short and simple as possible were adopted throughout anatomical nomenclature much rubbish’ could rapidly be removed A few examples must suffice

STUDIES IN ANATOMICAL NOMENCLATURE,

WITH A VIEW TO AN INTERNATIONAL NOMENCLATURE BASED UPON THE B N A

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Introduction to the Studies

"A NEW nomenclature ranks low in the registers of fame As a work of mere patience and industry, it aspires to no lustre or *éclat*, it promises no immortality to its author, nor secures to his name any enviable marks of distinction Its influence extends to what must appear only a speck in the map of science, and yet even there, if it should facilitate the progress of study and remove only a part of the rubbish that obstructs the journey, the author will consider his object as attained "

So wrote Dr John Barclay when he published "A New Anatomical Nomenclature" in 1803, and so, no doubt, would he be writing were he alive to day, for we may be sure he would still be publishing, not in the fond hope of winning distinction or immortality for himself, but simply from the desire to help the student by removing even a part of the rubbish that obstructs the journey

Both in the British and in the Austro-German nomenclature (which latter is commonly known as the B N A) the names are too often based upon unessentials and unilluminating, inconsistent with the facts and incompatible with each other The British nomenclature, however, has done long and faithful service, and now that it is fighting for its life against the Austro-German, he would, indeed, be a traitor to science in Britain who did not, if he could, prick the bubble of the Teutonic reputation for superiority Recent events have revealed the Teutons in a light surprising to many who have never had the opportunity of close acquaintance with the Teutonic scientist. For years the Teutons have catered wholesale for the wants of post-graduates and in this way have drawn to their Universities thousands of young men from all parts of the world This pilgrimage of the nations has led the willing Teutons to believe that their country is the Mecca of science and civilisation There is one civilisation and one science and the Teuton is its prophet That is their creed, and so loudly and so incessantly have they been proclaiming it that none can have failed to learn it, and many have come actually to believe it

The Teutonic anatomists of last century certainly deserve credit for having realised that about 85 per cent of the terms then in use were unnecessary and for having made a serious and successful attempt to get rid of them Chiefly by postal ballot they sifted out some 25,000 names, leaving as residue the B N A , which is not an international nomenclature based on scientific principles, but merely an inchoate list of 5000 Teutonic names for the various parts and structures of the human body Unfortunately the B N A has been adopted in the United States and in several of the British Dominions Even in Britain certain anatomists have recently attempted to oust the British in favour of the Teutonic nomenclature, and, although this attempt has been bitterly opposed, the student may listen to lectures in the British, dissect in the Teutonic, and converse in both with the natural result that he becomes cloudy in thought and incoherent in speech

It would be a long but by no means a difficult task to prove that the B N A is unscientific in conception, illiterate in language, and careless and inaccurate in execution It is a blunt and clumsy tool which cannot itself turn out the best class of work and which spoils those who use it for any tool capable of doing better

Destructive criticism, however, is of very limited value and a book on new lines, even if time could be found for its production would be foredoomed to failure The writer is inclined to believe that something might be accomplished by a series of short studies which might at least demonstrate what is too lightly regarded as impossible—namely, that the human body can be scientifically described in comparatively simple terms The first principle of anatomical nomenclature is that "every name shall be descriptive and as short and simple as possible" Any nomenclature which, like the Teutonic, professes that its names are "merely memory signs, and need lay no claim to description or to speculative interpretation," is already condemned out of its own mouth

The French have not adopted, and never will adopt, the B N A The time is ripe for throwing off the shackles of the inchoate nomenclature which makes anatomy so needlessly difficult and uninteresting and for producing a simple descriptive nomenclature capable of commanding the respect and winning the adhesion of all who do not confound precision with preciosity and accuracy with lumbering formality

STUDY I

The Direct Method

"Science and simplicity" should be the watchword of all scientific writing, and in accordance with this the first principle of anatomical nomenclature should be that "every name shall be descriptive and as short and simple as possible" The Austro-German nomenclature (which, because it was promulgated in 1895 at the so called International Conference of Anatomists at Basle is known as the Basle Nomina *Anatomica*, or, *for shortness*, the B N A) adopts among others the principles that "each term shall be as short and *simple as possible*" and that "the terms shall be merely *memory signs and need lay no claim to description or to* speculative interpretation" The B N A. does not state, indeed it does not apparently know, what it means by description, and it fails as a nomenclature simply because of its sublime refusal to admit that in anatomy every name should, if possible, have a meaning

What is the Direct Method?—The actual meaning of an anatomical name may in itself be of little importance, but it is only by carefully considering the meaning of each name that a satisfactory nomenclature can be evolved, since simplicity and shortness depend almost entirely upon the directness with which this meaning is expressed The incomparable value of such names as vomer, fibula, cornu, caput, and many others depends not so much upon their actual meaning as upon the directness with which that meaning is expressed How clumsy the forms os vomerinum, os fibulare, processus ceratoideus, processus capitalis or cephaloideus appear by contrast! Yet the B N A. contains many equally grotesque forms, such as os cuneiforme for cuneus os naviculare for navicula cartilago arytænoidea for arytæna, cartilago thyreoidea for thyreus, processus alaris for ala processus condyloideus for condylus The B N A. is indeed most instructive since, although many of its names are ideally descriptive, simple, and short its authors either had not the insight to discover the underlying principle or they lacked the courage or the patience to apply it They evidently realised that the ideal name for a structure or part of the body would be one which in some way related it to another structure or part, but they were puzzled by the fact that in not a few cases this was impossible They did not see that there must be an irreducible minimum of structures which while providing names for other structures, themselves require to be named on some different principle Take, for example, many of the bones Any method which should attempt to find names for the individual bones of the wrist from their relation to the other structures or parts of the body would be very cumbrous They might indeed from their position be called the os carpi proximale (or distale, as the case might be) primum, secundum, tertium, and quartum, but few would care to advocate such a terminology On the other hand, if they are to be named after their physical characters, the simplest method would be to call each bone after some object which it may be supposed in whole or in part to resemble The first bone of the wrist was originally supposed to resemble a scapha (σκαφη vessel, bowl boat), on which account it was called as in the British terminology the scaphoid or scapha like bone (σκαφο-ειδης vessel shaped) The Austro-Germans, taking scapha to mean a boat (cf skiff) latinised the name into os naviculare In either case the direct form scapha or navicula would be simpler and shorter To determine which of these two should be chosen, it should be borne in mind that scapha is the original and the shorter term, that it means a bowl rather than a boat, and that the wrist-bone under consideration, and especially the bone of the foot which bears the same name, resembles the former rather than the latter Still it must be recognised that while it is important that the bone should be called either the scapha or the navicula, it really does not seriously matter which of the two is chosen Some would cut the Gordian knot by retaining both names on the ground that they mean much the same thing and are both well known, although one is originally Greek and the other Latin This would violate one of the first principles of the B N A —namely, that "each part shall have only one name" The decision of such a question does not fall within the scope of this study, nor can any attempt be made here to deal with difficulties which may possibly arise from the use of Greek words through the medium of Latin

In many cases, then, the meaning of a name is of importance, only in so far as it ensures shortness and simplicity It is quite otherwise with names of relation, in which the meaning of the name may be instructive, e g , os frontale, os temporale os coccygis, os ischii. (It will be noticed that the B N A employs either the genitive or the adjective, but the former is certainly the more vivid, e.g , os frontis, os temporis, and it also simplifies the names of related structures)

II —*The Direct Method illustrated in the Naming of the Bones and Cartilages*

Just as the bones are the framework upon which the whole body is built up, so the names of the bones are the framework of all anatomical nomenclature Other structures and parts of the body may be named from the bones and in some cases the bones are named from the region in which they are found Often however, a bone must be named on some entirely different principle such as from its function as in the case of the atlas and axis vertebræ or from its physical resemblance to some object, such as a boat plough sieve wedge cube and so on It is natural, then in considering the principle enumerated above, to make a rapid survey of the names of the bones with which the cartilages may well be included

1 *Names of Complete Bones and Cartilages* —In naming a bone from its physical resemblance to *some object* the B N A adopts two methods

(A.) *The direct method* —In the direct method the bone is called by the actual name of the object which it is supposed to resemble, and it must, of course, be named after one object only If the resemblance is marked so much the better but at least the name is short and simple and the genitive case and adjective are easily formed, as is well seen in the following examples —

B N A	*Genitive*	*Adjective*	*Meaning*
Vomer	Vomeris.	Vomerinus	Plough
Radius	Radii	Radialis	Spoke
Fibula	Fibulæ	Fibularis	Brooch pin
Patella.	Patellæ	Patellaris	Limpet
Malleus	Mallei	Mallealis	Hammer
Incus	Incudis	Incudalis	*Anvil*
Stapes	Stapedis	Stapedius.	Stirrup

(B) *The indirect method* —In the indirect method the name is formed by combining the word os, bone, with an adjective expressing the resemblance e g —

B N A	*Meaning*
Os naviculare	Navicular or boat-shaped bone.
Os lunatum	Lunate or moon-shaped bone.
Os pisiforme.	Pisiform or pea shaped bone
Os cuboideum	Cuboid or cube-shaped bone.
Os ethmoidale	Ethmoidal or sieve-shaped bone

The indirect is the inferior method, since the name is longer, the genitive is clumsy, and the adjective is always some sort of a compromise, e g —

B N A	*Direct*	*Meaning*
1 Os naviculare Ossis navicularis Navicularis	1 Navicula. Naviculæ Navicularis	1 Boat
2. Os lunatum Ossis lunati Lunatus	2. Luna Lunæ Lunaris	2. Moon
3 Os pisiforme Ossis pisiformis Pisiformis	3 Pisum Pisi Pisalis	3 Pea
4 Os cuboideum Ossis cuboidei Cuboideus	4 Cubus Cubi Cubalis	4 Cube
5 Os ethmoidale Ossis ethmoidalis Ethmoidalis	5 Ethmus Ethmi Ethmalis	5 Sieve
6 Os cuneiforme Ossis cuneiformis Cuneiformis	6 Cuneus Cunei Cunealis	6 Wedge
7 Os sphenoidale Ossis sphenoidalis Sphenoidali	7 Sphen Sphenis Sphenalis	7 Wedge
8 Os sesamoideum Ossis sesamoidei Sesamoideus	8 Sesame Sesami Sesamalis	8 Sesame
9 Cartilago thyreoidea Cartilaginis thyreoideæ Thyreoideus	9 Thyreus Thyrei Thyrealis	9 Shield
10 Cartilago cricoidea Cartilaginis cricoideæ Cricoideus	10 Cricus Crici Cricalis	10 Signet ring
11 Cartilago arytænoidea Cartilaginis arytænoideæ Arytænoideus	11 Arytæna Arytænæ Arytænalis	11 Jug
12 Cartilago triticea Cartilaginis triticeæ Triticeus	12 Triticum Tritici Triticeus	12 Wheat grain

2 *General Terms Applied to Parts of Bones and Cartilages* —In naming parts of bones and cartilages the B N A frequently employs the direct method and with excellent result e g —

B N A	*Meaning*	*B N A*	*Meaning*
Spina.	Spine	Rostrum	Beak
Dens.	Tooth	Concha.	Shell
Cornu	Horn	Ala	Wing
Malleolus	Little hammer	Hamulus	Hooklet.
Condylus	Knuckle	Cochlea	Shell
Corona.	Crown	Jugum	Ridge
Caput	Head.	Ramus	Branch
Squama.	Scale	Collum	Neck
Sella.	Saddle	Trochlea	Pulley
Lingula.	Little tongue	Acetabulum	Cup

In the case of the second cervical vertebra the superiority of the B N A. term dens or tooth over the British odontoid process is obvious On the other hand, there are in the B N A many failures, e g —

B N A	*Direct*	*Meaning*
Processus spinosus	Spina.	Spine
Processus mammillaris	Mammilla	Nipple
Processus xiphoideus	Xiphus	Sword
Processus pterygoideus	Pteryx	Wing
Processus pyramidalis	Pyramis	Pyramid
Processus condyloideus	Condylus	Knuckle
Processus coronoideus	*Corona.*	Crown
Processus styloideus	Stylus	Style
Processus alaris	Ala	Wing
Processus coracoideus	Corax	Crow
Pars petrosa	Petra	Rock
Lamina cribrosa.	Cribrum	Sieve
Lamina papyracea	Papyrus	Papyrus
Cavitas glenoidalis	Glene	Cup

3 *Complete Names of Parts of Bones and Cartilages* —The complete name of the part of a bone or cartilage consists of a general term combined with the name of the bone or cartilage itself The B N A does this at haphazard with either the genitive or the adjective, e g —

B N A with Genitive	*B N A with adjective*
Manubrium sterni	Planum sternale
Spina ossis sphenoidalis	Lingula sphenoidalis

In all such combinations the genitive is to be preferred and direct forms should always be used In many instances the B N A is eminently satisfactory, e g —

B N A	
Spina scapulæ	Condylus tibiæ
Trochlea femoris	Ala vomeris

More often perhaps the B N A fails, e g —

B N A	*Direct*
Processus spinosus vertebræ	Spina vertebræ
Processus condyloideus mandibulæ	Condylus mandibulæ
Processus xiphoideus sterni	Xiphus sterni
Processus pterygoideus ossis sphenoidalis	Pteryx sphenis
Processus coronoideus ulnæ	Corona ulnæ
Processus styloideus radii	Stylus radii
Processus alaris ossis ethmoidalis	Ala ethmi
Lamina cribrosa ossis ethmoidalis	Cribrum ethmi
Lamina papyracea ossis ethmoidalis	Papyrus ethmi
Cavitas glenoidalis scapulæ	Glene scapulæ

The names may be even more complex, e g , (*a*) for a portion or part of a bone , (*b*) when part of a bone is in relation with some other structure, e.g —

B N A	*Direct*
(*a*) Laminæ processus pterygoidei ossis sphenoidalis	Laminæ pterygis sphenis
(*b*) Crista ethmoidalis maxillæ	Crista ethmalis maxillæ
Facies cerebralis ossis sphenoidalis	Facies cerebralis sphenis

4 *Names of Bones and Cartilages Employed in Forming Names for other Structures* —If the names of the bones were simple and short the names of many other structures could be shortened and simplified, e g —

B N A	*Direct*
Articulatio ossis pisiformis	Articulatio pisi
Articulatio calcaneocuboidea	Articulatio calcaneocubalis
Ligamentum cuboideonaviculare	Ligamentum cuboscaphale
Ligamentum navicularicuneiforme	Ligamentum scaphocuneale
Musculus thyreoarytænoideus	Musculus thyreoarytænalis
Musculus cricothyreoideus	Musculus cricothyrealis
Arteria thyreoidea	Arteria thyrealis.
Arteria ethmoidalis	Vena ethmalis
Vena chorioidea	Vena chorialis.
Emissarium condyloideum	Emissarium condylare
Nervus pterygoideus	Nervus pterygalis
Nervus ethmoidalis	Nervus ethmalis
Cisternæ subarachnoidales	Cisternæ subarachnales

III —*The Direct Method as a General Principle in Anatomical Nomenclature*

If the principle that "Every name shall be descriptive and as short and simple as possible" were adopted throughout anatomical nomenclature much "rubbish" could rapidly be removed A few examples must suffice

B N A	*Direct*
Dura mater	Dura
Arachnoidea	Arachne
Pia mater	Pia
Corpus callosum	Callosum
Corpus mammillare	Mammilla
Corpus quadrigeminum	Quadrigeminus
Corpus striatum	Striatum
Corpus restiforme	Restis
Rostrum corporis callosi	Rostrum callosi
Nuclei corporis mammillaris	Nuclei mammillæ

These names, without exception, refer to the brain and its membranes, the nomenclature and description of which afford excellent examples of "polysyllabic profundity and pompous prolixity" In a standard British work on histology are to be found in a single line the three adjectives, dural, arachnoidal, and pia matral Why not simply dural, arachnal and pial? The evil consequences of neglect of the direct method are well seen by a comparison of the principles which guided the authors of the B N A with the results attained in that nomenclature The secret of the failure of the B N A is undoubtedly its sublime refusal to admit that every name should, if possible, have a meaning No one who has not carefully studied the question can have the least idea how many terms in the B N A contradict the principles on which it is based Among such principles are the following —

(1) Each part shall have only one name

(2) Each term shall be in Latin and be philologically correct

(3) Each term shall be as short and simple as possible

(4) The terms shall be merely memory signs and need lay no claim to description or to speculative interpretation

The authors of the B N A seem to have been quite unaware how often its terms are unnecessarily and even absurdly long, how many are Greek or philologically incorrect or even actually duplicated In truth, it matters little whether anatomical terms are originally Latin or Greek and whether they are philologically correct, particularly in Britain, in these days when the average student and even teacher of medicine knows so little of either language The one thing of vital importance is that the names should be descriptive and as short and simple as possible If the official names are too often long, or complex or meaningless it is only to be expected that they will not be scrupulously employed. Everyone will find a substitute sometimes good, more often the reverse The official names must be such as no one need hesitate to use even in their official form Much of the apparent precision of the B N A is a specious preciosity indulgence in which soon destroys all sense of the value of words and the power to use them effectively Once admit that names need not mean anything and it is only too easy to speak and write in a way which is intelligible only when the meaning of the words is ignored. It is illiterate to use oid (ο-ειδης) as a simple adjectival termination—e g , taloid for talar, intercondyloid for intercondylar atloid for atlantic, and so on, and to speak of the liver as the hepatic organ is pure pomposity An eminent British surgeon writes that "The nasopharynx should be inspected by means of a post-nasal mirror or by digital exploration with the index finger" As if anyone could inspect with the finger, or could explore with the index otherwise than digitally! Again, "Brain abscesses of otitic origin occur most frequently in the temporo-sphenoidal and cerebellar lobes, more rarely in the frontal and occipital hemispheres" What are the cerebellar lobes, and where may the frontal and occipital hemispheres be found? Such disregard for precision is a poor testimonial to the real quality of science in Britain The B N A , however, is not alone responsible for these and the numerous other examples which might easily be given The British nomenclature is also to some extent guilty

IV —*The Direct Method is the Key to an International Nomenclature*

An international anatomical nomenclature is urgently needed, but conflicting national claims are difficult to reconcile Each national nomenclature, good in many ways, is in others sadly defective The only hope of reconciliation lies in a short and simple descriptive nomenclature based on principles so well defined that national partiality must give way before scientific method and practical utility

The authors of the B N A. had a magnificent opportunity but they failed because of their short-sightedness Instead of aiming at an international nomenclature, they deliberately limited themselves to forming a list of terms acceptable to German speaking anatomists, in the hope that later on they might gain the coöperation of anatomists speaking other languages Out of the 30,000 names to be found in the various standard text books of the day they succeeded in the Herculean task of clearing away about 25,000 They tried to evolve principles by the way, but these were of the most general character—e g , that "each part shall have only one name" , that "each term shall be in Latin and be philologically correct' , that "each term shall be as short and simple as possible" , that "adjectives in general shall be arranged as opposites—e g , dexter and sinister, major and minor, anterior and posterior, superficialis and profundus" Two of their principles were even contradictory—namely, that "related terms shall as far as possible be similar—e g , femur, arteria femoralis, vena femoralis nervus femoralis"—and that "the terms shall be merely memory signs and need lay no claim to description or to speculative interpretation" (or, in other words, "the terms shall be merely labels and need have no meaning")

These principles are quite in accordance with the remarkable method which they employed According to Professor Barker, "the editor took as a basis the names used in the latest large text-book of gross anatomy These terms were written down in a vertical column and the synonyms from a number of other much used text-books placed in parallel columns The lists were manifolded and a copy sent to each commissioner with the request that he mark the term of his choice, or, if he found none suitable to propose a new one for the structure concerned. Each commissioner was to return his list with comments to Professor Krause." Finally a special editing committee was appointed, consisting of Professors His, Krause, and Waldeyer, to whom was delegated "the task of giving a uniform character to the terminology as a whole" This committee must be held responsible for the failure of the B N A. Although the ore had been dug out the metal had not been extracted Each term having been balloted for independently it was now the duty of the special committee carefully to examine the list with a view to working out principles for the systematic naming of all structures belonging to each different type In naming the bones, for example, the B N A employs three methods, in naming the joints four, and so on, and these methods are employed at haphazard There is no principle to determine how many methods are necessary or which is to be chosen in any particular instance This is simply because each name is merely a "memory sign" or label quite independent of its fellows Though the structures fall into groups the members of the various groups need not be correlated in the nomenclature Each term is an isolated unit which need not even have a meaning

Such methods can never produce a scientific international nomenclature At best they may provide a list of terms for the use of anatomists of every nation in studying and teaching their science Even that is almost impossible because each term in the list has to contend against the national terms, and the B N A. has no principle which can decide in its favour Indeed, in many instances national terms are based upon principles before which the B N A. itself must bow Thus there arise from the brain and pass out of the cranium 12 nerves, of which four alone arise from the cerebrum The 12 are called in Germany the cerebral, and in Britain the cranial nerves Unless we are prepared to admit that "the terms shall be merely memory signs and need lay no claim to description or to speculative interpretation" the German term must be given up Moreover, even as a "memory sign" the accurately descriptive British term 'cranial' is preferable to the inaccurately descriptive German term "cerebral" It is throughout a war of principles, and herein lies the weakness of the B N A It has few principles and of these the one which claims that "the terms shall be merely memory signs" is of itself fatal Apart from this, however, the others are too general to decide conflicting national claims

If then the B N A is not, and never was intended to be an international nomenclature, it would be folly to allow it in Britain to oust the national nomenclature nor can we afford to leave the two to fight it out Those anatomists who have thrust the B N A into our midst may have been unwise, but those who object to it will be equally blameworthy if they merely wait and see It is their duty either to cast the B N A or the British nomenclature into an international form, or to work out a new international nomenclature from the various national terms in existence throughout the world to-day The best, probably the only, chance of success lies in remodelling the B N A according to well-defined principles, most of which can readily be evolved from the methods of the B N A itself The first principle of international nomenclature is, however, in part at least, absolutely at variance with the B N A.—' Every name must be descriptive, and as short and simple as possible ' For this the direct method is essential

REPORT OF THE LOCAL GOVERNMENT BOARD FOR 1916-17

THE forty sixth annual report of the Local Government Board has recently been issued With a view to economy it has been still further reduced in size by the exclusion of matter concerning the normal activities of the department and by the omission of statistical and other tables usually contained in these reports Part I gives interesting details of special preventive work for the relief of distress due to war for the maintenance of internment camps and for the accommodation of war refugees Part II deals with the administration of the several Working classes Acts, and of the Act of 1909 which relates to town planning Part III, with which we are more particularly concerned, relates *inter alia* to new work arising out of the war, under circumstances of special difficulty, consequent on serious depletion of the official staff

Public Health

Tuberculous disease—Under the National Insurance Act 291 residential institutions and 370 dispensaries in England and Wales have been approved by the Board, in the former of which 11,883 beds have been set apart for the treatment of tuberculosis This accommodation however, has already been proved insufficient, and proposals are under consideration for the provision of additional beds for tuberculous children In order to meet the needs of tuberculous soldiers and sailors who were about to be discharged from service on account of this infection provision has been made during the year for their treatment in residential institutions In addition to the buildings previously taken over by the military authorities for use as tuberculosis hospitals, a considerable number of beds have been devoted to that purpose in the course of 1916 Thus the adult pavilion at the Huddersfield Sanatorium has recently been completed and adapted for use as a temporary war hospital At Liverpool the Nurses' Home and the Children s Pavilion at the Fazakerley Sanatorium have been placed at the disposal of the War Office At Leeds the Killingbeck Hospital, with 60 beds, has been made available for the treatment of this disease, and additional accommodation has been provided by the town council at the Seacroft isolation hospital The Doncaster town council have lent to the military authorities their Balby Hospital for use in the treatment of tuberculosis

Venereal diseases—Substantial progress has been made in the organisation of measures for the provision of free diagnosis and treatment of venereal diseases The shortage of medical staff and of accommodation at most hospitals has presented serious obstacles Nevertheless, about 150 hospitals in this country have already expressed willingness to engage in the present campaign It is estimated that the arrangements already sanctioned will serve for a population of 18 millions out of a total of 25 millions for which accommodation has been approved The main features of the schemes for the diagnosis and treatment of venereal diseases in each county and borough will be published in a later report

Infectious diseases other than tuberculous and venereal diseases—The notification of the more important common infectious diseases is set forth in a table from which it appears that excluding measles and German measles which only became notifiable in the beginning of 1916 there has been in most cases a decrease in the numbers notified during last year as compared with 1915 This is in some degree attributable to the reduction in the civil population Especially noteworthy is the material fall in the fever attacks during 1916 Statistical details of infectious disease in England and Wales will appear in the report of the Board's medical officer to be issued as a supplement to the present report Having regard however, to war conditions the account of the work of the Board s medical inspectors acting under the medical officer's direction, will be much curtailed.

Maternity and child welfare—Government grants—Substantial progress was achieved last year in the development of schemes for safeguarding the health of expectant and nursing mothers as well as that of their offspring Provision for home visiting is known to be the most effective element in a scheme of this kind By the end of last year the councils of nearly all the large towns and a large proportion of the extra metropolitan county councils, had made some provision for home visiting The number of health visitors appointed by the local authorities which had been 600 in 1914 rose to 812 in 1915, and to 1445 by the end of February 1917 In addition health visiting has been undertaken on behalf of county councils by about 800 district nurses At the end of last year the number of salaried health visitors supported by voluntary agencies is reported to have reached 136, but a large additional number is still required in order to provide satisfactorily for the service of the whole country The maternity and child welfare centres have also increased rapidly—the number up to last Lady day having totalled 842 of which more than half were voluntary undertakings During the year 1916 the Local Government Board made grants in respect of maternity and child welfare schemes amounting to £68 000 The work however is hampered by the fact that the powers of English local authorities are more restricted than those of other parts of the United Kingdom

Medical officers on military service—Owing to the increasing demands of the war, and consequent also on the inhumanity of the enemy in sinking hospital ships, there has been a growing demand for medical men for the Army The number of medical officers released by local authorities in order to take temporary commissions with the forces now exceeds 500

URBAN VITAL STATISTICS

(Week ended Sept 1st 1917)

English and Welsh Towns—In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 10·6 against rates of 10 4 10 5, and 10 6 per 1000 in the three preceding weeks In London with a population exceeding 4 000 000 persons the death rate was also 10·6 or 0·1 per 1000 above that recorded in the previous week among the remaining towns the death rates ranged from 3 7 in Wallasey 4 4 in Gloucester and 4 8 in Ealing to 15 8 in Leeds 16 2 in Gateshead and 17 6 in Middlesbrough The principal epidemic diseases caused 430 deaths which corresponded to an annual rate of 1 3 per 1000 and comprised 312 from infantile diarrhœa, 41 from measles 31 from whooping-cough 27 from diphtheria, 11 from enteric fever and 8 from scarlet fever The deaths from diarrhœa, which had increased from 53 to 274 in the six preceding weeks further rose to 312, and included 95 in London 26 in Liverpool 18 in Leeds and 15 in West Ham and in Manchester The 622 cases of scarlet fever and 1022 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 8 above and 41 below the numbers remaining at the end of the previous week Of the 3455 deaths from all causes in the 96 towns 123 resulted from violence The causes of 31 deaths were uncertified of which 7 were registered in Liverpool and 5 in Gateshead but not one in London

Scotch Towns—In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500,000 persons, the annual death rate was 11·2, against 11 7 and 10·3 per 1000 in the two preceding weeks The 255 deaths in Glasgow corresponded to an annual rate of 11 8 per 1000 and included 33 from infantile diarrhœa, 4 from whooping-cough and 1 each from measles scarlet fever and diphtheria The 58 deaths in Edinburgh were equal to a rate of 9 1 per 1000 and included 1 from diphtheria.

Irish Towns—The 109 deaths in Dublin corresponded to an annual rate of 1 ·2, or 5 3 per 1000 less than that recorded in the previous week and included 26 from infantile diarrhœa and 2 from measles The 94 deaths in Belfast were equal to a rate of 12·5 per 1000, and included 5 from infantile diarrhœa, 2 from measles and one from whooping cough

THE name of Mr H Morriston Davies was inadvertently omitted from the list of the staff of University College Hospital, London given in our Students' Number (August 25th). Mr Davies recently retired from the active staff of the hospital on account of an unfortunate accident to his hand and was then appointed consulting surgeon

The War.

The Casualty List

The following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt C Weller, R A M C, attached London Regiment, was a student at Guy's Hospital, London and qualified in 1910 Before joining up he was in practice at Redhill, Surrey

Drowned

Col T Daly, C M G, R A M C, qualified in Ireland in 1881, and shortly afterwards joined the Army Medical Service, being appointed surgeon-captain in August, 1885 He saw much service in India, and took part in the South African War, for which he received medals and clasps and was mentioned in despatches He joined the Expeditionary Force in France soon after the outbreak of war, and had been an Assistant Director of Medical Services since the middle of 1915 He was on his way to Egypt when he was lost in the sinking of the transport *Arcadian*

Died of Wounds

Capt J E S Wilson, M C, R A M C, attached Oxford and Bucks Light Infantry, was a student at the London Hospital and qualified in 1911 Before joining up he was in practice at Iver, Bucks, where he was medical officer to the local cottage hospital and to the Alexandra House Home for Feeble Minded Girls He died in a hospital abroad The award of the M C was recorded in The Lancet of Sept 30th, 1916, p 621

Capt J C Harris, R A M C, was a student at the Dental Hospital and at the Birmingham University, qualifying L D S R C S Eng in 1906 and M R C S, L R C P Lond in 1910 Before joining up he was in practice at Wolverhampton

Wounded

Capt E G Anderson R A M C
Capt H M Clarke, R A.M C
Capt H J De Brent R A.M C, attached Cheshire Regiment
Capt D Lees, R A M C, attached Irish Guards
Capt W H Lister, M C, R A.M C
Capt H M Anderson, R A.M C
Lieut C J E Edmonds, R A M C, attached Manchester Regiment
Capt R I Harris, M C, R A M.C
Capt G A Hodgson, R A.M C
Capt H G Janion, M C, R A M C
Capt W J Knight, M C, R A M C
Capt I Ogilvie, R A M C
Capt W Leslie, M C, R A M C
Lieut Col C H S Frankau, R A M C
Lieut R T Worthington, R A.M C
Capt E S Smalpage, Australian A.M C
Capt T MacK Millar, M C, R A.M C
Capt J E Bloomer, Canadian A M C
Lieut Col A S Donaldson, Canadian A.M.C
Capt J H Jones, Canadian A M C
Capt J Moore Canadian A M C
Capt K Biggs R A M C attached R.F A
Capt H H. Elliot, R A.M C, attached Rifle Brigade
Capt D S Robertson, R A M C, attached Essex Regiment
Capt A R Hargreaves R.A M C, attached Royal Scots
Capt S A. W Munro, R A M C, attd Seaforth Highlanders

Previously reported Wounded, now reported Not Wounded

Major J P Kenny, Australian A.M C

Previously reported Wounded and Missing, now reported Prisoner in German hands

Capt H K Ward, M C, R.A M C, attached King's Royal Rifle Corps

Previously reported Missing, now reported Prisoner in German hands

Capt E D F Hayes, R A M C, attached Northampton Regiment

Casualties among the Sons of Medical Men

The following additional casualties among the sons of medical men are reported —

Second Lieut E R Osler, R F A, died of wounds, only child of Sir W Osler, Bart, Regius Professor of Medicine, Oxford University

Capt A Forbes Royal Warwickshire Regiment killed in action, elder son of the late Dr W G Forbes, of Stokesley, Yorkshire

Second Lieut E C G Hull Royal Field Artillery, killed in action elder son of Dr E G Hull of Streatham, London

Capt A V Burlton, Royal Flying Corps, killed in a flying accident at Catterick, only son of Lt Col A H. Burlton, R A.M C (retired)

[We learn that Dr L A Francis, of Uxbridge, has received unofficial information that his son, Second Lieut W F Francis, Hertfordshire Regt, is a prisoner of war at Karlsruhe, and has not been killed in action as officially reported by the War Office, and recorded in The Lancet of August 18th, p 259 *We sincerely trust that the more* recent information is correct]

Foreign Decorations

French

Légion d Honneur —Croix de Chevalier Maj (temp Lt. Col) A. B. Fry I M S

Croix de Guerre —Capt A L. Robertson R A M C S R. Temp Capt J W Edington R A M C Temp Lt. W McKee R.A.M C Capt W L Murphy R A M C Temp Lt D G C Tasker R.A.M C Capt L D Bailey R A M C Temp Lt R N Kapadia, I M.S Capt A W Forrester Med Officer Rhodesian Native Regt Capt F W Hay I M S; Capt J B Lapsley I M S Temp Maj T M R. Leonard, *W Afr Med Serv attd* Algerian Contingent.

Italian

Order of the Crown of Italy —Cavalier Maj (temp Lt-Col) W H Hamilton D S O I M S

Silver Medal for Military Valour —Capt C A Godson, I M S

Egyptian

Order of the Nile —Third Class Maj R B Black, D S O., late Egyptian Army and Sudan Government Service. *Fourth Class* Capt C M. Drew R.A.M C, late Medical Corps Egyptian Army Capt D S Buist R A M C Medical Corps Egyptian Army; Capt E M Parsons Smith R A.M C Medical Corps, Egyptian Army

Belgian

Order of Leopold —Commander Surg Gen Sir A W May K.C.B K H P

Order of the Crown —Commander Deputy Surg Gen J P McNabb R N *Officer* Fleet Surg K H Jones, R N

OBITUARY OF THE WAR

EDWARD COPLEY WARD, M D, M S R U I,

FLEET SURGEON ROYAL NAVY

Fleet-Surgeon E C Ward, who died on August 7th at the Royal Naval Hospital, Chatham, was eldest son of the late Thomas McNamara Ward of Charleville, Co Cork. He received his medical education at the Queen's College, Cork, and Edinburgh University where he had a distinguished career, graduating at the Royal University of Ireland in 1883 A year later he joined the Royal Navy, in which he nearly completed 33 years' service

His first commission was with H M S *Northumberland* at a time when H M the King was serving as a lieutenant His sea service was considerable, and included experiences of the Cape of Good Hope, the West Coast of Africa China, Australasia, the Mediterranean Home, and Channel Fleet Stations From 1907–10 he was senior medical officer of H M Dockyard, Chatham and subsequently in the Portsmouth and Chatham Divisions of the Home Fleets At the outbreak of the war he was serving with H M S *Cornwallis*, was transferred to the *Emperor of India*, and later appointed to the R N Barracks at Chatham, where he was serving as medical transport officer up to the time of his illness He underwent a severe surgical operation from which he appeared to be recovering when uræmic symptoms set in, from which he died rather suddenly

Sir James Porter writes of Fleet-Surgeon Ward as a loyal, devoted and capable public servant "His accuracy and thoroughness were very remarkable" And a friend adds 'He was a most faithful and cheery companion, and his popularity was as universal among his shipmates as it was during his student days"

ALFRED SQUIRE TAYLOR M B EDIN ,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain A. S Taylor, who was killed in action in Flanders on July 31st at the age of 28 years was youngest son of Rev D A. Taylor, D D Commissioner of Education in Ireland, and grandson of the late Sir David Taylor, of Belfast. He was educated at Campbell College and Edinburgh University, where he was president of the Union, and obtained his medical degrees in July, 1914 On the declaration of war he immediately volunteered for the Army serving first in France and then in Mesopotamia, whence he was invalided home On recovering his health he was sent again to the Western front attached to the Highland Light Infantry While dressing the wounds of a brother officer both he and his patient were killed instantaneously by the bursting of a shell

His chiefs write of Captain Taylor as a gallant officer and a good friend, cheery under all circumstances His keen sense of duty was seen in the quality of his work Captain Taylor was one of the most brilliant of Irish athletes, well known in the football and cricket fields In 1910 he won his Rugby cap against England and he also played for Ireland against Scotland and Wales as three-quarter

RICHARD WELLINGTON SHEGOG, M B , B CH DUB ,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain R W Shegog who died on active service in France on August 1st was elder son of the Rev R Shegog, late rector of Skernes co Dublin He was educated at Mountjoy School and Trinity College Dublin, at both of which he took a number of exhibitions, becoming a scholar and moderator in classics at his college He was an active member of the Dublin Biological Association and was awarded a medal for research work in immunity his paper on the subject being communicated to the Association. After taking his medical degree in June 1915, he joined the Royal Army Medical Corps and had just completed two years service when his career was cut short He was wounded at a dressing station on July 31st and died from shock on the following day

Captain Shegog was recently married to Florence Margaret daughter of the late Dr W Sandham Symes, of Chesterfield and leaves a widow and infant son

EDWARD SPENCER CALTHROP M B B S LOND

SURGEON ROYAL NAVY

Surgeon E S Calthrop who died on July 30th of toxic neuritis contracted in Gallipoli was second son of the late Edward Calthrop M R C S He studied medicine at Charing Cross Hospital Medical School obtaining the diploma of the Conjoint Board in 1913 and the medical degree of London University in the following year The day before war was declared he joined the Navy, going through the whole of the Gallipoli campaign and was afterwards attached to a Naval Division in Salonika and France His chief medical officer writes of him "I believe the world generally has lost a man who would have played a good part in it There was no man who did his duty more fearlessly or conscientiously", and another of his superiors adds "His care for the wounded was marvellous, he always volunteered for any job requiring skill and pluck in carrying it out, like the brave fellow he was The greater the danger the cheerier he was '

JOHN NELIGAN, M B , B CH N U I

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain J Neligan, whose death on active service was announced in THE LANCET of June 30th, was educated at King s College, London, completing his medical studies at the National University of Ireland where he graduated in June, 1915 After holding the post of assistant medical officer to the Leavesden Asylum, Herts he obtained a commission in the Royal Army Medical Corps, and was sent to Mesopotamia with the relief force in April, 1916 He was present at the capture of Bagdad, being mentioned in Sir Stanley Maude s despatch On his way home he volunteered for a second year's service and remained at Cairo where his death occurred

SAMUEL CHARLES ELLISON, M D EDIN ,

LIEUTENANT ROYAL ARMY MEDICAL CORPS

Lieutenant S C Ellison, who died in a military hospital in Egypt on July 17th, at the age of 42, was son of the late Rev John W Ellison M A., for many years minister of the Presbyterian Church at Sunderland He took his medical studies at the University of Edinburgh and Queen's College Belfast, where he was scholar qualifying in 1902 and obtaining the M D Edin two years later After obtaining practical experience as locum - tenent for a while he settled in Small Heath, Birmingham, where he built up a large practice over a period of 12 years Shortly after the outbreak of war he intimated his readiness to join the Royal Army Medical Corps when required He was ultimately called up last May and was sent out to Egypt where he died shortly after landing At a meeting of the Small Heath Ward of the Birmingham Practitioners Union a resolution was carried conveying the sympathy of the union to Lieutenant Ellison's relatives and placing on record his colleagues high appreciation of his many good qualities especially of his unfailing good nature and the high degree of conscientiousness shown by him in all dealings with his fellow practitioners

IT was stated at the last meeting of the Bristol Board of Guardians that the cost of the new infirmary which was recently erected at Southmead, and is now used as a military hospital was £61,550

TREATMENT OF THE INVALIDED SAILOR OR SOLDIER NEW REGULATIONS OF NATIONAL HEALTH INSURANCE

Memorandum 234 I C, which has just been issued to doctors, deals with the regulations under Section 4 of the National Insurance (Part I Amendment) Act, 1917, extending medical and sanatorium benefits to all invalided *uninsured sailors and soldiers whose income from all sources does not* exceed £160 a year The Insurance Commissioners admit that the position of invalided men in general is exceptional, but not in the absence of data to prove it that an excessive burden of liability to afford treatment necessarily arises They propose therefore what they describe as an "automatic solution" of the question at issue, which is payment on an attendance basis accounts being calculated on a slight extension scale in force as regards "temporary residents" A special fund will be constituted into which 9*s* per head per annum will be paid, and this fund, if insufficient for treatment on an attendance basis, will be supplemented to the necessary extent by an Exchequer grant

The proposed scale for calculating remuneration in respect of the treatment of disabled soldiers runs as follows —

	£	*s*	*d*
(1) Visit to the patient s residence	0	2	6
(2) Attendance on the patient at the practitioner s residence, surgery or dispensary	0	2	0
(3) Special visit (i e visit paid by the patient s desire on the same day as a call received after 10 A M or on Sunday)	0	3	6
(4) Night visit (i e visit made between the hours of 8 P M and 8 A M in response to a call received between those hours)	0	5	0
(5) †Surgical operation requiring local or general anæsthetic	1	1	0
(6) Administration of general anæsthetic for the purposes of any operation included in medical benefit	1	1	0
(7) † Setting of fracture	1	1	0
(8) † Reduction of dislocation	1	1	0
(9) Mileage, per mile beyond three miles (one way only)	0	1	0
(10) Attendance on patient attending at the practitioner s residence, surgery or dispensary for the purpose only of obtaining certificate	0	1	0
(11) Special Report under Art 8 of the National Health Insurance (Medical Benefit) Regulations 1916 (No 2)	0	1	0

† Subsequent visits or attendances to count as ordinary visits or attendances

The Commissioners admit that the case of the medical profession for special consideration applies to all invalided men as a class, and all such men invalided hereafter will be treated under the new payment per attendance arrangement, each invalided man being provided on his discharge with a special form, I S 1, to complete and present to the doctor of his choice, when he receives a special (blue) medical card. "Practical difficulties of identification" prevent the arrangement being made universally retrospective, but with regard to invalided men already included in his list the doctor will be given the option of retaining him as a capitation patient or having him placed upon the new basis. If he prefers the latter a special form, I S 2, to be obtained on application to the Insurance Committee, should be filled in, or when a patient who is already receiving treatment under the ordinary arrangement discloses the fact that he has been invalided from the Forces an endorsement on p 3 of the ordinary medical card "*Invalided in (month and year)*" will insure the issue of the special (blue) medical card

Other clauses in the Memorandum deal with the reference to the Local Pensions Committees for provision of special treatment under the terms of the new Royal Warrant and the admission of practitioners not on the panel under a special agreement to the same terms and conditions of service to invalided men

TREATMENT OF DISABLED SOLDIERS IN SCOTLAND

A scheme is developing in Scotland for the succour of the soldier who finds himself on discharge still suffering from the results of service Three new hospitals in and near Edinburgh have been planned, the sites chosen, and the financial arrangements concluded Under the Pensions Ministry, which has set up district committees for the formation of hospitals, Scotland has been divided for the purpose of caring for the discharged soldier into four districts—namely, Edinburgh and South Eastern, Glasgow and South Western Dundee and Central and Aberdeen and Northern The dominating committee of all these districts is the Institution Committee for Scotland

When these committees were formed the view was taken in the Edinburgh district that five diseases demanded the provision of special hospitals—viz, neurasthenia, epilepsy, tuberculosis, advanced rheumatism, and paraplegia Arrangements have now been made to provide three institutions for the succour of three types of patient The neurasthenic hospital will be at Craig End Liberton This estate has been purchased by the city of Edinburgh corporation for £13,500 and they will lease it to the Edinburgh and South Eastern District Committee. Nearly 60 patients will be admitted there as soon as the conversion is complete. It will be the only hospital of its kind in Scotland, and it is thought that in future years the University of Edinburgh may find it a very suitable establishment for neurasthenic treatment should they follow out their idea, at present put forward, of founding a chair of neurasthenics The hospital for epileptics, the committee s second project, will be at Muriston, near Calder, 16 miles from Edinburgh This epileptic colony may also be retained as a permanent institution For orthopædic cases the Edinburgh Committee has secured a building in Edinburgh which, with comparatively small cost can be transformed into a temporary hospital The aim was to place the new hospital near a centre where discharged disabled soldiers are trained for civilian employment, and it has been located accordingly in the neighbourhood of an institution now controlled by the educational authorities of the city for the purposes of technical instruction Arrangements have been made for the treatment of *discharged men suffering from excessive* rheumatism at Red Cross auxiliary hospitals at Moffat and Strathpeffer, while consumptive and paraplegic patients will come under the special care of existing Edinburgh institutions The financial burden of these enterprises is being borne partly by the Treasury but in greater measure by the Red Cross Society

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be temporary Surgeons: C J A. McKillop and A. Selby Green

The following appointments have been notified:—Fleet Surgeons W G Westcott to *Edgar* and T H Vickers to *Hecla* Staff-Surgeons P L. Crosbie to *Apollo* Surgeons W C Carson to *Victory* and J L. Priston to Plymouth Hospital Temporary Surgeons D A Macknight to *Ajax* J Fairbrother to Chatham Hospital H N D Richards to Plymouth Hospital M. B R. Swann to *Bacchante* J A. Hadfield to *Spanker* W M Fairlee to Gibraltar Hospital and J Hollings to *Pembroke* additional for Chatham Hospital

ROYAL NAVAL VOLUNTEER RESERVE.

The following appointment has been notified:—Surgeon D A. Macpherson to *Pembroke*

ARMY MEDICAL SERVICE

Surg Gen Sir Tom Percy Woodhouse, *K.C.M G., C B is retained* on the Active List under the provisions of Arts 120 and 522, Royal Warrant for Pay and Promotion and to be supernumerary

Lieut. Col William W Clemesha I M.S *to be temporary Colonel* whilst employed as Assistant Director of Medical Services

Col F W C Jones C B is placed on the Retired List

ROYAL ARMY MEDICAL CORPS

Temp Capt W H F F Godwin relinquishes his commission.

Temp Lieut Henry R Marsh relinquishes his commission

Temp Lieut W T Warwick relinquishes his commission on account of ill health

SPECIAL RESERVE OF OFFICERS

J M Savage to be Lieutenant.

TERRITORIAL FORCE.

Capt (temp Major) W J Hoyten relinquishes his temporary rank.

Capt W Marley Cass relinquishes his commission on account of ill health contracted on active service, and is granted the honorary rank of Captain

To be Captains: Lieut. K Atkin and Lieut. R L. Collett.

Major H Rutherford is restored to the establishment.

Capt. (temp Major) H B Whitehouse relinquishes his temporary rank on alteration in posting and is restored to the establishment

Lieut B R Marle to be Captain

Capt. C P C Sargent from Territorial Force Reserves *to be Captain*

Capt. R E Humphrey is now seconded for duty with a General Hospital

OVERSEA CONTINGENTS

Canadian Army Medical Corps

Lieut. Col R P Wright, D S O Canadian A M Corps *to be* Assistant Director of Medical Services and to be Temporary Colonel whilst so employed

Temp Lieut J McW Taylor to be Temporary Captain

Temp Capt. H. B Jeffs M C to be Temporary Major

V B Barrow to be Temporary Captain

INDIAN MEDICAL SERVICE

Lieut Col W Molesworth C I E M.B., V H S to be Colonel

Correspondence.

"Audi alteram partem."

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH

THE NEW SCHOOL

To the Editor of THE LANCET

SIR,—Controversy, above all with an old friend, is distasteful to me, there is something more to be said, but this shall be my last word.

It seems I was wrong in my definition of the "old" and "new" schools, it is not that the old is the clinical, and the new school that which armed with the new and powerful methods of polygraph, X rays electro-cardiogram, and so forth has recently laid us under lasting obligations Sir James Mackenzie retorts that "it is the hospital and laboratory workers" (the physiologists and pathologists) that blind" as they are, have "dominated the profession" and given themselves insufferable airs These are the "old" school The new school, as with some candour he gives us to understand, is Sir James Mackenzie himself. As such, he declares, for instance, that "the medical profession" took up "recruiting, utterly unconscious of the fact that they did not possess the necessary knowledge" "Had the Royal College of Physicians itself taken up the duty" (i e, every Member and Fellow except, of course, Sir James Mackenzie himself) "the same disastrous results would have followed because the necessary knowledge does not exist" (though the *new school is not* without some good notion of it). Alas! this accusation is but too true We all unless always for one of us, are far indeed from any certain and comprehensive understanding of that last and crowning miracle of creation, the human body We have been, it is true, modestly thankful that we had penetrated a little way, and learned something, in two thousand years, but we are chastened by the verdict of the new school that our meddling with recruiting has been "disastrous" Not that the medical officers engaged, consisting of persons of various skill and experience, occupied on an unwonted task of enormous difficulty, and driven under terrific pressure, have made mistakes this interpretation would be too generous to them, they would have been better away, their interference has been simply disastrous." Their fault was sheer "ignorance of the amount of work a man in impaired health is capable of undertaking" Why, let us take a simpler case In a girder of a bridge a flaw is found out accidentally—a flaw subject to stresses frosts, and rust The engineer is ordered to state definitely "the amount of work that impaired girder (still *in situ*) is capable of undertaking As the girder is "failing" all the time he can but say that if Baldwin locomotives weighing 400 tons with trucks of like capacity are sent over the bridge at speeds of 60 miles an hour it will collapse pretty soon, but that if light loads and low speeds be enforced well, it may last ever so long But the engineer then will appear as stupid and incompetent as the "old school" physician

We were told that we blundered because we "cannot grasp the (new) movement and "the significance of principles, we cannot search rightly (as the new school does) for the mechanism by which a symptom is produced nor calculate the ultimate effect of the primary fault. Now, to meet the new school I set out after my antique manner one or two only of the more important of these very principles in order to interpret this very "mechanism Above all things surely the heart is a pump and the circulation a hydraulic system I quoted therefore one or two of the elementary hydraulic principles fundamentally implied such as the cross sections of chambers and tubes and the behaviour of viscous fluids in linear or turbulent motion with the respective losses of kinetic energy and so forth, plain laws of dynamics taught in all our schools That they were correctly set out and of no far-spun or academic character but in this matter of immediate and fundamental importance I have since been assured by two or three distinguished physicists and physiologists What is the comment of the new school on my answer to its own demand Sir James Mackenzie says "I frankly confess I don t understand him and refrain from criticising"! The new school "frankly" is indifferent to the elementary laws of the functions of the pump and vascular system of whose "mechanism" it contemptuously asserts that its opponents are stupidly ignorant

Again, Sir James Mackenzie has "searched the writings" of home and foreign authors, and "failed completely to get from any of them a clear description of what is meant by heart failure No wonder, by no literary ingenuity can so loose and colloquial a phrase be made to stand upright or to support any precise argument He pays me the compliment of saying that he has thus searched even my poor essays and in vain I am writing now away from all books, my own or other, but if Sir James Mackenzie will look again into my *Diseases of Arteries* (Vol II) he will find that in my opinion to say a man died of heart failure is about as precise as the old saw that "he died of shortness of breath" No engineer would use "girder failure" as a technical term

While scoffing at us for inattention to the origins of maladies, Sir James Mackenzie himself still hovers only over the final phases of a cardiac fault one, it may be, of long standing, when a local has begun to extend itself into a more general disturbance In his last letter he repeats that the first sign to be looked for is a "sensation" "Every genuine sensation" he says (what is a non genuine sensation?) "has a physical cause in its production" (e g palpitation, exhaustion, &c.) Is "physical" exclusive of psychical? If not, we are left with the information that every sensation is caused, no very bright illumination But it is in part this very psychical element which makes "effort tests" so fallible, until, indeed, "sensations" begin to stare us in the face without their help Sir James Mackenzie adds that "long before physical signs are evident the patient is conscious that something is amiss" This is the sort of proposition that the new school lays down—a vague proposition as often wrong as right One longs for a quarter of an hour of the Socratic method with the new school. As to the paragraph on palpitation, if its content is valuable to the new school, the old school to a man will cheerfully do without it I am not writing flippantly Sir James Mackenzie is a very able man and has no doubt profounder meanings in his mind. I criticise, and can criticise, only what is written

For farther illumination Sir James Mackenzie leaves the heart for gastric ulcer of which, it seems, we are as ignorant as we are of heart diseases Again he twits me personally with "ignorance of the cause and nature of heartburn"—a term surely even as loose as "heart failure" itself Old women and others use it in various senses, but generally to signify, not regurgitation of the cleaner acid of the gastric juice, often in excess in gastric ulcer, but rather of the acrid products of the butyric fermentation, not a very abstruse process However, in gastric ulcer "heartburn is not a characteristic nor a very common feature—not, that is, in the ordinary use of the word The proper pain of gastric ulcer arises when the peritoneal covering of the viscus is affected, as Dr Hugh Anderson has explained.

Furthermore, Sir James Mackenzie writes "The elementary knowledge for understanding pain is not yet known to the profession We even do not know what tissues are capable of producing pain" This assertion reminds me of that in the previous letter which declared that no careful attempts had ever been made to study the behaviour of the heart in pregnancy I then pointed out that on the contrary a great deal of particularly careful work had been devoted to this very subject and now I note that this subject is silently dropped—with the "innocent murmurs" But I gladly testify that in this field, before the "new school began Sir James Mackenzie had done some early, original and promising work work which I believe he has laid aside for other disquisitions, but that merit cannot justify his lofty indifference to the no less valuable work of others in the sensory field such as that of Dogiel Henry Head H K Anderson Mott and many another fellow neurologist Dr Anderson indeed has precisely demonstrated the very tissue which is asked for—namely that in which visceral or other pains have their origin and seat[1] I fear Sir James Mackenzie may again "frankly confess his ignorance of these researches but it is such isolation which allows an author to write without a blush "No physician in the past had any conception of how to bring to light the information behind a patient's sensations, nor knew how to set about acquiring that information "! "No physician in the past", that is, until the new school arose!

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[1] I am sorry that being away from home I cannot give the reference but I have quoted his researches in my "Diseases of the Arteries"

I have animadverted more than once on the looseness of the terms and phrases of the new school a looseness which betrays a like habit of dealing with thought, evidence, and doctrine In a grave peroration Sir James Mackenzie after advising the younger teachers not to lean on authority but to use their own faculties of observation and reason—a very salutary lesson but one which Sir James Mackenzie must have borrowed from the "old school"—appeals to them farther as follows "Before you teach your students a simple fact, verify it from your personal experience, or search in the writings of your authorities for their reasons in making a statement" A "fact" is rather demonstrated than taught, alone it teaches nothing, nor is a fact a "statement", nor again in the fact alone, uncoördinated with other facts, are there any reasons A fact is no more a rational "statement" than a brick is a house It is this lack of precision in terms in the new school which gives rise to much misunderstanding And I am sorry to note a less excusable error Sir James Mackenzie chides me for refusing for life insurance two brothers, otherwise eligible, on account of occasional extrasystoles in both Now against this reading I had explicitly guarded myself by this clause—"or rather for stating the facts that led to their refusal' I well remember—for the coincidence was a curious one—telling these men that I had advised acceptance It may surprise Sir James Mackenzie to hear that thirty or forty years ago the nature and significance of extrasystoles, thanks to observations of Burdon Sanderson, B W Richardson, Balfour, and many other physicians of the time, were as well, or as little, understood by the old school as they are now by the new

Finally, Sir James Mackenzie knows I hope, that no one has a greater respect for his work, and personal regard for himself than I have We, all of us owe much to him If to my regret I shall have seemed to say anything inconsistent with this regard it is out of my regard for other men and other things also I am, Sir, yours faithfully,

CLIFFORD ALLBUTT

Ullswater Hotel Patterdale Westmorland August 26th 1917

PS —In your issue of Sept 1st is an interesting letter by Dr E W Adams on the question of the adequacy of language to thought That new thoughts may need new language or new readaptations of it, is true, but our first duty is to see that we use in a precise manner such language and terms as we possess

To the Editor of THE LANCET

SIR,—Two years' experience of cardiac work at a base overseas has shown that the question a medical officer has most often to answer in a "heart" case is a practical one "Is the man 'fit' or 'unfit' for active service?' The "effort test" by Army physical drill as recommended by the workers at the Military Hospital at Hampstead, was utilised to aid in answering this important question During the whole of this experience the question of the clinical significance of a systolic murmur at the apex of the heart was constantly under consideration The difficulty of estimating the myocardial efficiency by the response to effort, under circumstances where men may, *even unconsciously*, exaggerate their complaints, increases the complexity of the problem

Sir Clifford Allbutt in his letter to THE LANCET of Aug 4th, which purports to represent the "old" school begs the question by discussing "endocardial murmurs" The assessment of the importance of a systolic murmur is only possible when we know the cause to which it is due To describe a bruit as an endocardial murmur in no way explains the pathology of its origin The teaching of Mackenzie that we should endeavour to ascertain the real cause of any murmur heard, is always illustrated by his conception of the cardiac complications of rheumatic fever Here the student in the "new" school learns the cause to be an infective process, often of slow progression, as demonstrated by the study of the infected individual throughout the rest of his life It becomes difficult to *disentangle "old"* and "new' school ideas, but together they represent the tide of scientific progress A study with the continuity of observation that Sir James Mackenzie desires of the soil," as represented by the infected patient, must bear fruit equally with the researches that are conducted upon the "seed" The more so as to-day the clinical side of the study of many chronic infective processes is just as difficult and obscure as is their bacteriological aspect

I am, Sir, yours faithfully,

JOHN E MACILWAINE

College gardens Belfast August 17th 1917

THE GENESIS OF PHOBIAS IN CHILDHOOD

To the Editor of THE LANCET

SIR,—In your issue of August 18th Captain W H R Rivers has recorded very fully an interesting case of claustrophobia By careful direction of the thoughts of the sufferer, the remembrance of a certain terrifying incident in his childhood was regained As a little child he had been shut up in a closed space, unable to escape the attentions of a growling dog *A complete cure followed* when the tardy recollection of this incident had provided the explanation of the origin of the phobia I suppose it is possible that in the sensitive mind of a child a single severe shock of this kind may produce effects which persist long after the recollection of the incident has faded from memory I have had a patient, 50 years of age, who from fear of falling had never been able to go down stairs without holding on to the banisters In his case, however, family tradition assigned the infirmity to a fall in early childhood, and since he had long accepted this explanation, though without recollection of it himself, I was unable to exercise 'psycho analysis' or effect a cure by a demonstration of the causative incident.

Whether such forgotten experiences are or are not a common cause of neuroses I do not pretend to say but I think that everyone who is a student of childhood as well as of Freudism, in determining the cause of a phobia, would lay the greater stress, not upon any one shocking or terrifying experience, but upon the unwise attitude of parents and nurses in focussing the child's attention upon the fear in sapping his confidence by showing their own apprehensions and communicating them to the suggestible child The child *of himself is not afraid to* fall It is the parents who make him afraid by treating the fall as a disaster The child of himself is not afraid of being left alone It is the parents who undermine his confidence by keeping him always under observation from a nameless dread of what may happen to him

Captain Rivers s analysis of his case of claustrophobia ignores this all important point The malign influence was doubtless here a too great solicitude for an ailing child An atmosphere of unrest and apprehension in the nursery exerts a depressing influence upon the mental equilibrium, the physical constitution, and the whole vitality of the child, and this influence is exerted not on a single occasion only, but throughout all the years of childhood The restoring of the incident to memory and the subsequent freedom from *symptoms indicate no more* than that the extreme suggestibility which was his undoing during an ill managed childhood is still to be found in the patient If this sufferer from claustrophobia had had full recollection of the incident, or if the family had persistently repeated the story to him, would his own study of the teaching of Freud, which we are told had been close have sufficed to effect a cure without the stimulating influence of Captain Rivers s personality? I think not —I am, Sir, yours faithfully,

H CHARLES CAMERON

London, W, August 28th 1917

THE RELATION OF TRENCH FEVER TO OTHER CONDITIONS

To the Editor of THE LANCET

SIR,—The following preliminary statement on the relations existing between trench fever, 'P U O," myalgia, 'rheumatism," 'influenza" 'D A H" (or "soldier s heart") and other obscure conditions accounting for an enormous percentage of the morbidity in the British Armies, appears to us to be of sufficient interest to be brought at once to the notice of the profession The observations on which our conclusions are based were carried out on a large number of cases grouped as indicated above We submit —

1 That it is of the utmost importance to search carefully for the sources of toxin which may have precipitated breakdown in this group of cases

2. That trench fever is a source of toxin in these conditions which cannot safely be ignored

3 That many of the cases diagnosed as "pyrexia of uncertain origin" (P U O), myalgia, "rheumatism," "influenza,' should really be recognised as cases of trench fever

4 That the trench fever infection is far more persistent than has been generally supposed, and that, as a consequence, its sequelæ are more widespread and important than has been recognised

5 That hyperalgesic areas of skin and muscle are commonly met with in cases having a history of trench fever, "P U O ," myalgia, 'rheumatism," influenza " and also malaria, and that the same areas exist in many cases of D A.H., or 'soldier s heart," who may not be able to give a definite history of trench fever at the time of observation, but who, nevertheless, on exposure to undue effort, not infrequently develop a slight remitting temperature and other symptoms indicative of trench fever

Disordered action of the heart (D A.H) in the soldier is now by some observers recognised as a clinical entity, but the condition may, nevertheless, conceivably result in the large majority of instances from one of many forms of intoxication or infection. The importance of leaving no effort unexpended to identify the specific toxin in each instance has not, perhaps, been fully admitted The impairment of physical capacity has been carefully estimated, the classification of patients by their response to graduated exercise has been instituted as a reliable guide to the medical officer, but what remains to be done is to show that, granted intoxication or infection as a cause, a sound treatment must be based on the recognition and subsequent elimination of the toxin which caused the damage

Our observations on the above enumerated conditions seem to us to support the view that intoxication or infection underlies D A.H , and are therefore submitted for publication in the hope that the future investigation of the condition may be along the lines of a broader inquiry into the causes of intoxication rather than in further estimation of its effects

The recent work of one of our number Captain Dimond in his recognition of the organism associated with trench fever illustrates what we mean, and if the remaining sources of intoxication or infection whether in the blood lungs kidneys or alimentary tract could be similarly isolated by special workers we would be safe in assuming that a prognosis could, in most cases be arrived at and prophylactic measures and treatment materially advanced

We hope at an early date to publish a more complete statement upon our findings

We are Sir yours faithfully,
W BYAM, Major R A.M.C Officer in Charge Medical Division
LYN DIMOND Captain, R.A.M C
V E SORAPURE Captain, R A M C
R M WILSON Lieutenant R A.M.C
Hampstead Military Hospital Sept 3rd 1917

*** A communication on the subject of trench fever from Captain Lyn Dimond appears in another part of our present issue —ED L

PSYCHIATRY IN ENGLAND

To the Editor of THE LANCET

SIR,—Everyone with any experience of the treatment of mental and nervous breakdown must have read your leading article on The Effect of the War upon Psychiatry in England with the deepest interest. Shell shock cases and other mental disturbances caused by the war must have individual rather than general treatment and as these cases are in the large majority purely functional it is manifestly clear that they require encouragement happy environment and people to be with them to distract their minds in various ways gain their confidence and assure them that they will soon be quite themselves again The excellent book you mention by Professor G Elliot Smith and Mr T H Pear does not to my mind instil into our minds the necessity for well chosen companions or nurses to help in their treatment and too much stress is laid upon the physician s help It is absolutely wicked to send many of these cases to asylums, although I have known of some few cases where such limitations were necessary and where they could not safely be supervised anywhere else especially cases with a definite impulsive suicidal tendency

With some 44 years of experience in lunacy the matter is one that greatly appeals to me For the first 14 years of my medical life I dealt considerably with borderland cases, and many of these were saved from the necessity of certification For the next 20 years I was superintendent of a fairly large private asylum while during the last 10 years I have treated large numbers of borderland cases, and have seen very many mental cases in consultation That the present lunacy laws are a great handicap to early treatment is a matter too well known to need discussion, though I admit that the Board of Control are taking a much less decidedly old fashioned way of dealing with many cases and thus making it easier for experienced psychologists to deal with early mental cases without the fear of legal prosecution against those who receive these cases One great fact which has never been satisfactorily cleared up is the standing reproach that with our palatial institutions for the insane, and with our great increase in pathological research, the recovery rate of insanity is no higher to-day in these institutions than it was in the decade of 1865 to 1875

I have been in correspondence with many mental physicians and with the Lunacy Board of Scotland, in which country far more clinical work is carried out than is the case in England, and yet the recovery rate is still *in statu quo*, and I have not yet been able to come to any definite conclusion as to the cause of this deplorable fact It may be due to many causes (1) the legal restrictions, which make the proper early treatment so difficult, (2) the want of individual study of the character, temperament and causes which have led to the mental breakdown, and (3) perhaps the most important of all causes, the want of proper departmentisation of cases in asylums This last cause has been brought home to me in many cases Patients have been sent to institutions with the danger mark of suicidal *tendency*, and with this stigma they have been placed at once on the side of the asylum with the worst cases, because there, and there only, can constant supervision be easily and economically carried out I have known mild cases of this sort which have been rendered much worse by being herded together with severe mental patients to their definite detriment. In the asylum I presided over I made a point of this departmentisation with very good results, while some of my patients who lived with my family hardly realised that they were in an asylum, and I could give the history of the recovery of many of such cases Then, again I fear we do not employ sufficient lady and gentleman companions who if well trained, have such a beneficial effect upon many patients

It is certainly the fact that many general practitioners are now getting into touch with mental cases caused by shell shock and nervous disturbance and gaining a considerable experience but we still have many busy medical men who in their own words cannot be bothered with mental cases and have no spare time to give to looking after them, ' and are only too glad to get them off their books

I am, Sir, yours faithfully,
Bournemouth Sept 3rd 1917 L A. WEATHERLY, M D

INFANT MORTALITY AT VILLIERS-LE-DUC

To the Editor of THE LANCET

SIR,—In your annotation in THE LANCET of Sept 1st relating to the report on infant mortality issued by the Commonwealth Committee on Death and Invalidity you say that the report refers to the scheme enforced by the Municipality of Villiers le-Duc which it claims has simply abolished the death rate of infants The same claim was made in a recent Milroy lecture I have not seen the Commonwealth report but it is difficult to believe that its authors were aware of the extreme smallness of the data upon which these conclusions are based The experience of *Villiers le-Duc has* been widely boomed by social reformers, but in none of the accounts which I have seen have the actual figures been quoted—merely the death *rates* The following are the facts —

	Total births	Deaths	Infant mortality rate.
1892-1903	54	0	0
1903-1915	43	4	93

Taking the two periods together we have a rate of 41 deaths per 1000 births which is about equal to the average of Connaught and much of the west of Ireland and many healthy English rural districts

Of course, no one with even an elementary knowledge of statistics would draw inferences from such wholly insufficient material, and to work out infant mortality rates per 1000 births on an average of less than 6 births per annum is the acme of absurdity Yet this has been done in several of the published accounts of the Villiers le Duc scheme in order to show the effects of regulations

I am, Sir, yours faithfully,
WILLIAM A BREND

Barmouth North Wales Sept 2nd 1917

CAUTION IN GRANTING MEDICAL CERTIFICATES

To the Editor of THE LANCET

SIR,—Inasmuch as one of the daily duties of consultants just now is the granting of medical certificates to men who anticipate being called up on military service, it has occurred to me that in order to prevent the possibility of personation by unscrupulous people it is wise to get the examinee to write his signature in one's presence on the certificate given him Otherwise the unfortunate consultant might find himself figuring at a later period in a criminal trial !

I am, Sir, yours faithfully,
Wimpole-street W, August 29th 1917 DAN MCKENZIE

Obituary.

ARTHUR EDWARD PATTERSON, M D ABERD

Dr A E Patterson, who died on August 26th after a short illness, was senior assistant medical officer to the City of London Mental Hospital, Dartford Son of the late Major D A Patterson, he received the whole of his education in Aberdeen, graduating M B, C M at the University in 1885 After a short period of general practice he became assistant medical officer to the Derby Borough Asylum, and was later appointed to the City of London Mental Hospital A conscientious and painstaking officer, his cheery manner and true kindness of heart made him popular amongst staff and patients alike He was an active member of the Medico Psychological Association, and published several articles, of which the most important was "An Analysis of 1000 Admissions into the City of London Asylum," in the *Journal of Mental Science*

Medical News.

MEDICAL OFFICERSHIP OF BATH —The post of medical officer of health for the city of Bath, rendered vacant by the death of Dr W H Symons, will be temporarily filled for the duration of the war and six months afterwards by Mr C A G Collins, the medical officer of the Bath Statutory Hospital It was felt by the sanitary authority of the city that, with so many potential candidates serving in the war, it would have been unfair to have advertised a permanent appointment, a view with which Mr Collins has stated himself to be in accord

MEASLES AND RESEARCH —At the last meeting of the Sanitary Committee of the Manchester Corporation the following resolution was passed —

> That in view of the frequently recurring outbreaks of measles on an extensive scale throughout the country and the mortality among young children occasioned thereby this council urges upon the Government the desirability of setting aside a sum of money for research work into the causation of this disease and the best means of securing its prevention

A copy of the resolution has been forwarded to the President of the Local Government Board

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

APPLECROSS PARISH COUNCIL.—Medical Officer and Public Vaccinator for the Torridon District Salary £150 per annum with house, &c

BELFAST MUNICIPAL SANATORIUM Whiteabbey —Lady Superintendent (Temporary) Salary at rate of £120 per annum with rations &c

BIRKENHEAD BOROUGH HOSPITAL —Junior House Surgeon Salary £175 per annum with board &c.

BIRKENHEAD UNION INFIRMARY —Junior Female Resident Assistant Medical Officer Salary at rate of £300 per annum with board &c.

BOLTON INFIRMARY —Female Locum Tenens Assistant House Surgeon

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon. Salary at rate of £120 per annum with board &c

BURY INFIRMARY —Junior House Surgeon Salary £150 per annum with board &c

CARLISLE CUMBERLAND INFIRMARY —Female House Surgeon for six months Salary at rate of £250 per annum with board &c. Also Female House Physician for six months. Salary at rate of £200 per annum with board &c

CUMBERLAND COUNTY OF —Female Assistant Medical Officer Salary £350 per annum

DARTFORD KENT CITY OF LONDON MENTAL HOSPITAL.—Temporary Assistant Medical Officer Salary £7 7s per week with board, &c

DERBY DERBYSHIRE ROYAL INFIRMARY —House Surgeon. Salary £200 per annum, with board, &c.

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL, Haverstock Hill N W 3 —House Physician for six months Salary at rate of £200 per annum with usual allowances

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST Brompton —House Physician for six months Salary 30 guineas.

HULL, VICTORIA HOSPITAL FOR SICK CHILDREN —House Surgeon

MANCHESTER, ANCOATS HOSPITAL.—Unqualified Resident Salary £50 per annum, with board &c

MANCHESTER, ST MARY'S HOSPITAL FOR WOMEN AND CHILDREN —House Surgeon for Maternity Hospital Salary £200 per annum with board &c

MANCHESTER COUNTY ASYLUM Prestwich —Locum Tenens. Salary £7 7s per week with board &c.

MIDDLESEX EDUCATION COMMITTEE, MEDICAL INSPECTION OF SCHOOL CHILDREN —Temporary Assistant School Medical Officers Salary at rate of £350 per annum

NORTHUMBERLAND COUNTY COUNCIL.—Temporary Assistant County Medical Officer of Health and Assistant School Medical Officer *Salary at rate of £350 per annum.*

NOTTINGHAM AND MIDLAND EYE INFIRMARY —Ophthalmic House Surgeon

PORTSMOUTH, ROYAL PORTSMOUTH HOSPITAL.—House Surgeon for six *months Salary £250 per annum with board &c*

ROTHERHAM HOSPITAL —Junior House Surgeon. Salary £160 with board &c

SALFORD ROYAL HOSPITAL.—Junior House Surgeon for six months *Salary at rate of £150 per annum with board &c.*

SHEFFIELD ROYAL INFIRMARY —Two House Surgeons Salary £120 per annum, with board, &c

STAFFORDSHIRE WOLVERHAMPTON AND DUDLEY JOINT COMMITTEE FOR TUBERCULOSIS —Resident Medical Officer for Moxley Sanatorium near Wednesbury Staffs also to assist the Dispensary Medical Officers Salary £300 per annum with board &c

STOCKPORT INFIRMARY —Senior House Surgeon Salary £250 per annum with board &c

WEST LONDON HOSPITAL Hammersmith W —House Surgeon Salary £4 4s weekly with board, &c

WIGAN ROYAL ALBERT EDWARD INFIRMARY —Junior House Surgeon Salary £200 per annum with board &c

THE Chief Inspector of Factories, Home Office, London S W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Littleborough (Lancaster) and Wotton under Edge (Gloucester)

Births, Marriages, and Deaths.

BIRTHS

DAUNT —On August 19th in Edinburgh the wife of Captain Francis Eldon Daunt M B B S Lond R A M C of a daughter

ORAM —On August 31st, at Ridgemount, Anerley Park, S E the wife of Capt Alger Roy Oram M B B Ch B A O N U I R A M C of a daughter

ROXBURGH —On August 30th at Belgrave crescent Edinburgh the wife of Temp Surgeon Archibald Cathcart Roxburgh, M B B C Camb R N of a son

WADMORE —On August 28th at Clifton Bristol the wife of Captain Wadmore R A M C, of a son

MARRIAGES

HEARN—COOLING —On Sept 3rd at the Hampstead Parish Church Captain Reginald John Hearn L M S S A Lond R A M C to Winifred Maud younger daughter of Mr and Mrs Cooling of Hampstead

HIGGINS–INGRAM —On August 29th at the Parish Church Congleton Cheshire by the Rev Thomas Twistington Higgins M A father of the bridegroom assisted by the Rev Charles Edward Sullivan M A vicar of Hulme Walfield Thomas Twistington Higgins F R C S Captain R A M C to Jessie younger daughter of Thomas Ingram B A of Melrose, Scotland

WRIGHT—LOWENFELD —On August 25th at the Chapel Royal Savoy Henry Wardel Snarey Wright M R C S Eng L R C P Lond Captain R A M C to Helena Rosa Lowenfeld M B B S Lond of Great Cumberland place London

DEATHS

ATKINSON —On Sept 1st, at Saffron Walden John Parkinson Atkinson M D Glasg L R C P Lond L R C S Ed J P aged 79

FIELDING —On August 31st at Bethel street Norwich James Fielding M D Vict Univ Canada L R C P Edin M R C S Eng of The Crescent Norwich

GRIFFITH WILLIAMS —On Sept. 1st at Mattishall William Henry Griffith Williams L R C P L R C S Edin

HORA —On August 31st at his residence Hazel Brae Filsham Park St Leonards-on Sea Mr James Hora Vice-President of the London Hospital and treasurer of Westminster Hospital late of Victoria street Westminster S W aged 91

LAVER.—On August 31st at 43 Head-street, Colchester Alderman Henry Laver, J P M R C S, F S A in his 88th year Funeral Tuesday Sept 4th St. Mary at the Walls Church Colchester

N B —A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

Notes, Short Comments, and Answers to Correspondents.

HEALTH AND HOSPITALS IN HONG KONG

A REPORT on the Blue book of Hong Kong for the year 1916 has just been presented through the Colonial Office to the Houses of Parliament It states, *inter alia* that the civil population of the colony, according to the Census taken in 1911, was 456,739, of whom 104,287 resided in the New Territories and in New Kowloon, at the Census taken in 1906 it was 301,967 exclusive of the New Territories and of New Kowloon The estimated total population at the middle of the year under review was 528 010, but this includes the New Territories, and, as the birth and death figures given below do not include those from this area (*with the exception of New Kowloon*), the population for the purposes of calculating these rates is estimated at 431,510, of whom 13,390 were non Chinese

The corrected birth rate for the year was 8 1 per 1000 among the Chinese community and 23·05 per 1000 among the non Chinese community as compared with 8 4 and 13 2 during 1915 The death rate for the year was 24·6 per 1000 among the Chinese community and 15·03 among the non Chinese *community*, as compared with 19 0 and 9 4 during 1915 The number of deaths from malaria (378) showed an increase on the previous year (356) The deaths of Chinese *from* this cause in the city of Victoria numbered 162 out of a population of 270 300 or a rate of 0·6 per 1000 per annum The deaths from plague numbered 39 as compared with 144 in 1915 Small pox deaths numbered 542, all Chinese with the exception of three British and one each American Portuguese, and Indian There were 2112 deaths *from* respiratory diseases among the Chinese as compared with 2313 in 1915 Pulmonary tuberculosis and phthisis claimed 963 Chinese victims while other forms of tuberculosis *represent* an additional 554 deaths, making a total of 1517 or 14 4 per cent of the grand total of deaths among that community Beri beri was *responsible* for 517 deaths as compared with 393 during 1915 and 333 in 1914 During the past few years circulars have been distributed *to* all large employers of coolie labour calling their attention to the fact that beri beri is produced by the consumption of white rice as the staple article of diet without a sufficiency of other foods and advising that beans should be supplied with the rice when fresh *meat* or *fresh* fish cannot be afforded

The Civil Hospital at Hong Kong *contains* 150 beds in 19 wards In it 3063 in patients and 12 620 out patients were treated during 1916 as against 3065 and 14 159 respectively in 1915 360 cases of malarial fever were admitted as against 364 in 1915 and 324 in 1914 but the total cases of malaria for all Government *hospitals* and the Tung Wa Hospital showed an increase of 684 cases as compared with the year 1915 At Kennedy Town Infectious Diseases Hospital which contains 26 beds 30 cases were treated *in 1916* all being small pox The lunatic asylum is under the direction of the superintendent of the civil hospital European and Chinese patients are separated the European portion containing 8 *beds* in separate wards, and the Chinese portion 16 beds 237 patients of all races were treated during 1916 and there were 6 deaths The *Tung Wa Hospital* opened in 1872, is *mainly* supported by the voluntary subscriptions of Chinese but receives an annual grant of 8000 dollars from the *Government* Only Chinese are *treated in* this institution Chinese as well as European methods of treatment are employed in accordance with the wishes expressed by the patients or their friends about half the *number* are now treated by Western methods It is under the supervision of a visiting physician who is a member of the medical department whilst two Chinese house *surgeons*, trained in Western medicine are members of the hospital staff There are 323 beds in the buildings and 5150 patients were accommodated during 1916 *The Tung Wa* also maintain a *branch* hospital for small pox cases (Chinese only) at Kennedy Town It contains 58 beds, and during 1916 171 cases were treated The Alice Memorial and Affiliated *Hospitals* are managed and controlled by the missionaries resident in Hong Kong agents *of* the London Missionary Society and consist of the Alice Memorial Hospital opened in 1887 the Nethersole Hospital opened in 1893 the Alice Memorial Maternity Hospital opened in 1904 and the Ho Miu Ling Hospital opened in 1906 The number of in patients in 1915 was 1731 the number of labours in the Maternity Hospital was 450

To avoid the complete seclusion from friends and relatives which removal of Chinese plague patients to the Kennedy Town Infectious Diseases Hospital entailed four district plague hospitals are now maintained by the Chinese in various parts of the colony These are under the management of the same committee as are the Chinese public dispensaries These dispensaries eight in number are maintained by voluntary subscriptions in order to provide the Chinese with the services of doctors whose certificates will be accepted by the registrar of deaths and with the services of interpreters who can [illegible] the inmates of houses where cases of infectious diseases occur Coolies are engaged and ambulances and dead vans provided in order to remove cases of infectious disease to the Infectious Diseases Hospital and dead bodies to the mortuary The dispensaries also receive infants and send them to one or other of the convents and arrange for the burial of dead infants Free advice and medicine are given and patients are [illegible] at their houses The Kwong Wa Hospital for Chinese in the Kowloon Peninsula contains [illegible] patients were accommodated during 1916 One [illegible] in the colony [illegible] supported by [illegible] founded under the will of the late Mr Granville Sharp and [illegible] British American and [illegible] accommodation [illegible] three [illegible] a main [illegible] for [illegible] block [illegible] during [illegible] the main building

The mean shade temperature for the year at the Royal Observatory Kowloon (108 feet above mean sea level) was 71 8° 0 4° lower than the mean for the past 10 years The total rainfall for the year was 79 855 inches as compared with an average of 82 56 inches during the 10 preceding years

One of the most notable events of the year in Hong Kong was the first Congregation of the University, which was held on Dec. 14th, when honorary degrees were conferred on, amongst others, Sir Robert Ho Tung, a merchant of Hong Kong, the founder of a chair of clinical surgery in the University, Dr Wu Lien Teh, who, after a brilliant career at Cambridge and in medical schools in England and on the continent, has done much useful work in China, including the stamping out of the plague epidemic in North Manchuria in 1910–11, and several graduates in the Faculty of Medicine At the end of the year the number of students taking the course in medicine at the University was 52 The University is composed of three faculties—Medical, Arts and Engineering The medical offers ample facilities for the practice of medicine The anatomical laboratories were the gift of a Cantonese gentleman, Mr Ng Li hing There is a large staff of instructors in medicine and all the principal medical practitioners in Hong Kong give lectures at the University

INTRAMUSCULAR GALYL

Messrs The Anglo French Drug Company, Limited, of Gamage Building Holborn, London, E C 1, point out in regard to our analytical notice of this preparation in our issue last week that the capacity of the ampoule was stated to be 15 cubic centimetres, whereas the volume of fluid is 2 cubic centimetres, containing 15 centigrammes of galyl

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N I Z—All writers on medical jurisprudence agree that the giving of a second certificate of death is inadvisable There is no statute expressly forbidding a medical practitioner to do so but apparently there are provisions annulling the value of any certificate other than the one first given These provisions had their origin in a praiseworthy attempt to prevent the over insurance of children A section in the Friendly Societies Act, 1875 prohibits a registrar of deaths giving a certificate for an insured child unless the cause of death has been entered in the register on the certificate of a coroner or of a registered medical practitioner The issue of two medical certificates might place the registrar in a difficult position

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST GRADUATE COLLEGE, West London Hospital Hammersmith road W

MONDAY —2 P M. Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye Dr Simson: Diseases of Women

TUESDAY —2 P.M Medical and Surgical Clinics X Rays Mr Baldwin Operations Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet: Diseases of the Skin.

WEDNESDAY —10 A.M Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat Nose and Ear 2 P M. Medical and Surgical Clinics X Rays Mr Pardoe: Operations.

THURSDAY —2 P.M Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye.

FRIDAY —10 A M Dr Simson: Gynæcological Operations 2 P M., Medical and Surgical Clinics X Rays. Mr Baldwin: Operations. Dr Banks Davis Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin

SATURDAY —10 A.M Dr Saunders: Diseases of Children Dr Banks Davis: Operations of the Throat Nose and Ear Mr B Harman Eye Operations 2 P.M, Medical and Surgical Clinics X Rays Mr Pardoe: Operations

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR" and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Letters whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot prescribe or recommend practitioners

Offices 423, STRAND, LONDON W C 2.

MANAGER'S NOTICES

VOLUMES AND CASES

VOLUMES for the first half of the year 1917 are now ready Bound in cloth, gilt lettered, price 21s , carriage extra

Cases for binding the half year's numbers (inland edition) are also ready Cloth, gilt lettered, price 2s 6d , by post 2s 10d

To be obtained on application to the Manager, accompanied by remittance

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied

METEOROLOGICAL READINGS

(Taken daily at 8 30 a m by Steward s Instruments)

THE LANCET Office, Sept 5th 1917

Date.	Rain fall	Solar Radio in Vacuo	Maxi mum Temp Shade	Min Temp	Wet Bulb	Dry Bulb	Remarks
Aug 30		105	66	55	55	58	Cloudy
31	0 04	107	69	57	56	58	Cloudy
Sept 1	0 01	77	61	57	58	59	Raining
, 2		116	69	55	54	58	Cloudy
,, 3	0 01	109	72	51	55	58	Cloudy
, 4		112	74	53	56	59	Fine
,, 5		105	74	57	58	62	Fine

Other information which we have been accustomed to give in these 'Readings" is withheld for the period of the war

BOOKS, ETC , RECEIVED

BLAKISTON P , SON AND CO Philadelphia
Manual of Organic Materia Medica and Pharmacognosy By L E Sayre B S , Ph M Fourth edition revised $4 50 net

LIBRAIRIE J B BAILLIÈRE ET FILS Paris
Le Péritoine en Chirurgie de Guerre *Par le Dr M Stassen et le Dr J Voncken*

LIPPINCOTT (J B) CO London, Philadelphia, and Montreal
Text book of *Ophthalmology By Hofrat E Fuchs* (Vienna) Authorised translation of twelfth German edition by A Duane, M D (New York) Fifth edition 37s net

MACMILLAN AND CO *London*
Class book of Organic Chemistry By J B Cohen, Ph D B Sc , F R S 4s 6d

SHERRATT AND HUGHES Manchester
Scientific Treatise on Smoke Abatement. By H Hamilton, A R San I A.M I Mech E 5s net.

WRIGHT JOHN AND SONS London and Bristol
British Journal of Surgery Vol IV Edited by Sir Berkeley G A. Moynihan C.B and Others 30s net.
Glimpses of My Life in Aran : Some Experiences of a District Nurse in these Remote Islands off the West Coast of Ireland By B N Hedderman. Part I Price 2s 6d net.

The following journals, magazines &c. *have been received* :— M A. B British Journal of Dental Science Archives Médicales Belges Albany Medical Annals M D Man American Journal of Surgery Edinburgh Medical Journal Bristol Medico-Chirurgical Journal British Dental Journal

Communications, Letters, &c., have been received from—

A—Dr G H H Almond Bath Capt W Appleyard R.A.M.C Messrs Arnold and Sons Lond ; Messrs Allen and Hanburys Lond Mrs M. C Arthur Lond. Anglo-French Drug Co , Lond. African Film Productions Lond. Mr E A Armstrong Ashbourne

B —Lieut. A, Brown, R.A.M C Messrs F P Baker and Co Lond Mr K. S Bhat, Lond.; Bethel Hospital Norwich Clerk to the Capt. A. Barr A.V C ; B R ; Lieut. C R. Brown, Capt F G Bennett, R.A.M.C , Capt R L. Barwick, R.A.M C ; Belfast Corporation Town Clerk of Lieut D *Brown* R.A M C Messrs John Bale Sons and Danielsson Lond British Medical Association (Malta Branch) Valetta, Hon Sec. of Messrs Butterworth and Co Lond.; Lieut N Bradley R.A.M C Capt St. J *D* Buxton R.A.M C Prof D T Barry Cork; Mr S C Biswas, Lond. Dr W A Brend

C —Dr H *Crouse El Paso* U S.A City of Coventry Education Dept , Clerk to the County Asylum Prestwich, Clerk to the Cumberland Infirmary Carlisle Sec of; Dr P S Clarke Lond.; Mrs. Calthorp, Lond.; Capt. J Campbell, *R A.M C (S R)* ; Dr J C Connell, Kingston Ontario

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E —Dr H Emerson New York Mr G F Eyles Rugby Lieut. Col T R Elliott, *R.A.M.C* Dr H A Ellis Middlesbrough Mrs H A. Edmunds Brockweir Capt. C M Elliott, R A.M C ; Capt. H H. Elliott, R.A.M.C ; Eastbourne Eye Infirmary, Sec of

F —Lieut. A. Fleming R A.M.C Mr G E Footner, Lond.; Messrs J S Fry and Sons Bristol Staff Surg R R. Fasson R.N Staff Surg P Fildes R N V R Dr W Fingland, Liverpool Dr E G Fearnsides Lond. Major A. W Falconer R A M C (T)

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H.—*Prof* R T Hewlett Lond , Mr G Hunter Girvan ; Messrs A Heywood and *Son Manchester*; Messrs. Howards and Sons Ilford Major W E Home R A.M C ; *The Hospital* Lond. Editor of Holborn Advertising Service Lond. Messrs Harrison and Sons, Lond.

J —*Sir Robert Jones Liverpool* Jessop Hospital for Women, Sheffield Sec. of

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L.—Capt. C W R Littlejohn R A M.C Messrs Lee and Nightingale Liverpool Messrs. H. K Lewis and *Co* , Lond *Mr P W Latham Fossoway* Messrs J Lyons and Co Lond. Mr C E Lisle Birmingham Local Government Board Lond Sec. of ; Miss Ethel de Longeuil Cramond.

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N —National Association for the Prevention of Infant Mortality Lond. Sec. of National Health Insurance Commissioners Lond Northumberland County Council, Newcastle-on Tyne County Medical Officer of National Health Insurance Commission, (England) Solicitor's Dept.; Capt. A. T Nankivell R.A.M.C. The *National Party* Lond. Sec. of Mr W Naughtin Lond

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S —Capt. J Spears, R.A.M.C *Dr* N Smith, Isle of Caldy Messrs G Street and Co Lond. St. *George s Retreat, Burgess* Hill Superioress of ; Messrs. W H Smith and Son, Lond. *Lieut. F D Simpson R A.M.C.*; Messrs Singer and Co., Coventry; Stockport Infirmary, Sec. of St Mary s Hospitals for Women and Children Manchester Sec. of Dr R. V Solly Exeter; Mr W T Shiells Lond. Capt. *G I Strachan R.A.M C (T)* St Mary s Hospital Medical School, Lond. Acting Sec of Dr R. H Steen Dartford; Dr C Slater, Lond. Dr Agnes Savill Dr C J Symonds C B , Burlesdon.

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Letters, each with enclosure, are also acknowledged from—

A.—Abbott Laboratories Chicago A. G R H

B.—Mr E *Byrne Slane* Messrs Brown Shipley and Co Lond Mr C S Boston Corfe Castle Sir William Bennett, K.C V O Lond.; Dr W Beatty Dublin Belfast County Borough, City Chamberlain of Capt. G P A. Bracken R.A.M *C*

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D —Dr F L. Dickson, Shanklin Mr N R. Dharmavir Padiham

E.—*Essex Daily Standard*, Colchester

F —Dr S G Feice Burgess Hill ; Messrs Fannin and Co Dublin

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M.—Mrs. McLaren, Harpenden Major R McCarrison I M S Lieut. H A. Mitchell C.A.M C Messrs Mather and Crowther Lond.; Metropolitan Academy of Music, Lond Mr J W Messler, Springfield U S A. Messrs. Martyn, Wivell, and French, Camelford.

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W —Dr J H Whiteside, *Kilham* Messrs J Wright and Sons Bristol Dr S West, Lond.; Dr F J J Wood, Farnham Royal Mr T F Wyse Margate Dr C R Williamson, Lond.; Worcestershire Asylum, Bromsgrove Clerk to the; Mr A. Wilson, Lond.

FOURTH

Analysis

OF

CASES OF TETANUS TREATED IN HOME MILITARY HOSPITALS

DURING PART OF OCTOBER NOVEMBER, AND PART OF DECEMBER, 1916

By Sir DAVID BRUCE, C B, F R S, F R C P,
SURGEON GENERAL, ARMY MEDICAL SERVICE.

THREE analyses of cases of tetanus treated in home hospitals have been published in THE LANCET—one on Oct 23rd, 1915 the second on Dec 2nd, 1916, and the third on June 30th, 1917

In the third analysis it was stated that the intention was to publish each series of 100 cases as they occurred, and the present paper deals with the first 100 cases completed since the last analysis was written The number of cases of tetanus dealt with in the four periods and the rate of mortality are given in Table I —

TABLE I.

Analyses	No of cases	Recovered	Died.	Mortality per cent
1914-15	231	98	133	57·7
1915-16	195	99	96	49·2
Aug -Oct 1916.	200	127	73	36·5
Oct -Dec. 1916	100	69	31	31·0

It is satisfactory to see that the rate of mortality is steadily going down

THE DISTRIBUTION OF CASES OF TETANUS FROM AUGUST, 1914, TO DECEMBER, 1916

Diagram 1 merely represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war They are taken from the date of the wound not from the date of onset of the disease. For example in August 1914 there were five men wounded who sooner or later developed tetanus The figures have no relation to the number of wounded or the number of troops engaged It shows periods of activity and inactivity in the fighting line

Diagram 2 represents the number of cases of tetanus which have been treated in home military hospitals since the beginning of the war They are taken from the date of the onset of the disease For example in August 1914 there were two wounded men in England who had been attacked by tetanus

THE NUMBER OF CASES OF TETANUS OCCURRING AMONG WOUNDED SOLDIERS

Diagram 3 represents the ratio of cases of tetanus to the number of wounded soldiers treated in home military hospitals from August 1914 to December 1916 It will be seen that the ratio in September 1914 is about six times as high as in November 1914 and that it remains at the lower level until the end of 1916 This fall in the ratio is undoubtedly to a great extent due to the introduction of prophylactic injections of antitetanic serum which took place about the middle of October

RELATION OF THE NUMBER OF DAYS WHICH ELAPSED BETWEEN THE DATE OF WOUND AND THE ONSET OF SYMPTOMS AND THE RATE OF MORTALITY

Diagram 4 shows that in the 100 cases dealt with, if the symptoms of tetanus appeared within 10 days of receiving the wound the mortality was 83 3 per cent , if between the eleventh and twenty fourth day 29 6 per cent The remaining 57 cases with an incubation period of from 25 to 100 days 16 per cent The shorter the incubation period the greater the rate of mortality the longer the incubation period the smaller the rate of mortality

No 4907

DIAGRAM 1.

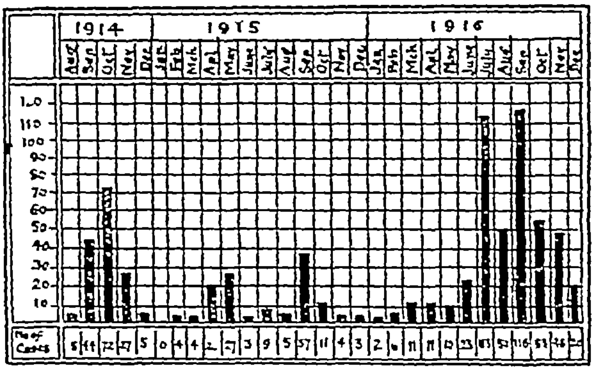


DIAGRAM 2

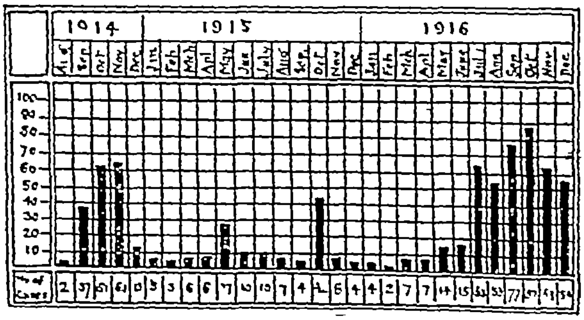


DIAGRAM 3

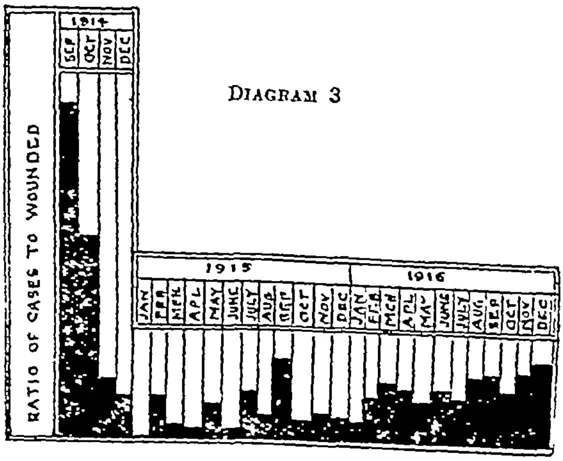
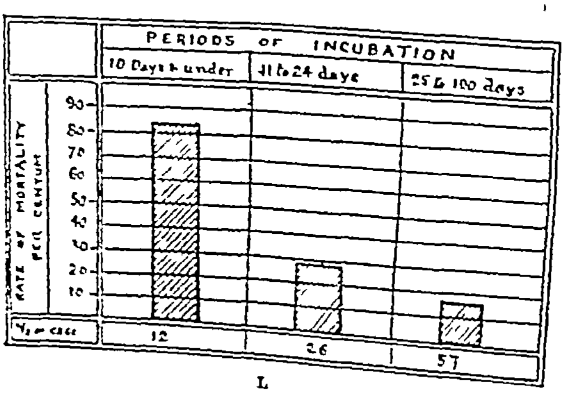
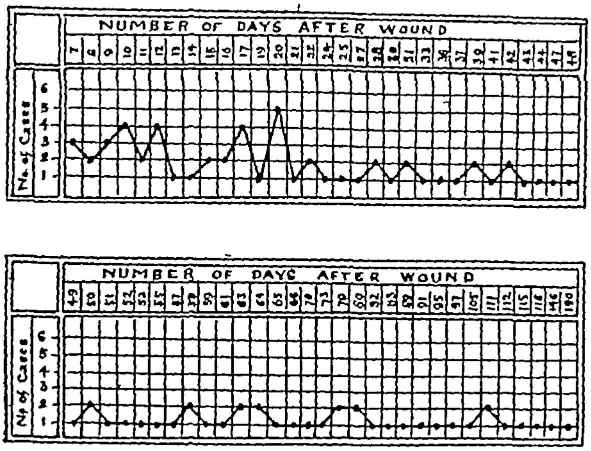


DIAGRAM 4



THE INCUBATION PERIOD, OR NUMBER OF DAYS WHICH ELAPSE BETWEEN THE DATE OF WOUND AND THE ONSET OF TETANUS SYMPTOMS

CURVE A



Curve A shows the number of cases which occurred on each day after the date of the wound. The shortest period of incubation was seven days, the longest 190 Only 95 out of the 100 cases are recorded, the incubation period in the remaining 5 not being given in their reports There were only 12 cases with a short incubation period—that is, up to 10 days, and 60 cases with an incubation period of more than 22 days

THE VARIATION IN THE PERIOD OF INCUBATION SINCE THE BEGINNING OF THE WAR

The following table gives the number, in percentages, of cases of tetanus with short, medium, and long incubation periods which have occurred since the beginning of the war From it will be seen that in the first year there were 47 per cent of cases with a short incubation, whereas in the last analysis this has fallen to 12 6 per cent. In 1914–15 there were only 6 4 per cent of cases with a long incubation period, this rose at the end of 1916 to 61 1 per cent

TABLE II.—*Incubation Periods*

Analyses.	Up to 10 days per cent.	11 to 22 days, per cent	More than 22 days, per cent.
1914–15	47·0	46·4	6·4
1915–16	15·5	48 8	35·6
Aug to Oct, 1916	14·0	43 8	42 1
Oct to Dec, 1916	12·6	26 3	61 1

This is a measure of the action of the prophylactic inoculation of antitoxin. During the first year of the war many of the wounded did not receive this, hence the number of acute cases with a short incubation

THE PROPORTION OF CASES OF LOCAL TETANUS TO GENERAL TETANUS

It is by no means easy in many cases to decide whether a case is one of generalised or localised tetanus By generalised tetanus is meant the occurrence of spasticity or rigidity in muscles distant from the site of wound Trismus is the most common initial symptom in general tetanus

In local tetanus the spasticity or rigidity is confined to the muscles in the neighbourhood of the wound In a case of this kind arising, for example, from a wound of the right leg the toxin may be pictured as passing up the nerves and affecting the motor cells of the cord which regulate the nervous supply to the muscles of the wounded leg In these cases the toxin does not appear to proceed farther up the cord or to be capable of spreading by the blood stream Hence the symptoms of twitching, spasm, or rigidity are confined to the wounded limb Local tetanus may be looked upon as a much modified variety of the original disease, or even as a new type, due to the action of the prophylactic injection of antitoxin

In general tetanus, on the other hand, the toxin molecules may be pictured as gaining entrance to the circulation and so reaching all parts of the nervous system In this case trismus is frequently the first symptom either on account of some selective quality towards the toxin inherent in the fifth nerve or on account of the shortness of the nervous route between the masseter muscles and the central nervous system

On examining the 100 cases under consideration it was found that 61 could be placed in the general and 28 in the local group In 11 it was doubtful to which group they belonged or if the cause of death was tetanus In the 61 cases of generalised tetanus there were 40 recoveries and 21 deaths, a mortality of 34 4 per cent All the cases of localised tetanus recovered The symptom of trismus is recorded in 54 out of the 61 cases, opisthotonos in 17 The following table gives this in tabular form —

TABLE III

Cases	Type of tetanus	Recovered	Died.	Mortality, per cent
61	General	40	21	34·4
28	Local	28	0	0·0
11	Doubtful	1	10	91·0

THE POSITION OF THE WOUNDS IN REFERENCE TO THE MORTALITY

TABLE IV

Position of wounds	No of cases.	Recovered.	Died	Mortality per cent.
Body	38	24	14	36·8
Limbs	62	45	17	27·4

Among these were nine cases of trench feet, seven of whom died. Also a case following appendicitis and one following an operation for hæmorrhoids

THE EFFECT OF FRACTURES ON THE RATE OF MORTALITY IN CASES OF TETANUS

TABLE V

Wound.	No of cases	Recovered.	Died	Mortality per cent.
Fractures ..	35	31	4	11·4
No fracture	65	38	27	41·5

In the previous, or third, analysis the percentage of wounds with fracture of one or more bones was 36, with a rate of mortality of 30 1 per cent It is difficult to understand why this fall in the rate of mortality to 11·4 per cent has taken place

TETANUS OCCURRING AFTER OPERATIVE INTERFERENCE WITH THE WOUND

TABLE VI.

No of case.	Date of wound	Date of operation	Date of tetanus	Days after wound	Days after operation	Nature of wound	Nature of operation	Recovered	Died
	1916	1916	1916						
637	12–8	30–10	9–11	89	10	Fract r thigh	Amputation.	—	D
550	28–8	3–11	10–11	82	7	Fract. l thigh leg & l. elbow	Passive movement of elbow	R	—
611	14–11	23–11	25–11	11	2	Wound of calf	Vein ligatured.	—	D
620	7–11	22–11	23–11	15	1	Behind l ear and elbow	Removal of bullet near 2nd cerv vertebra	—	D
647	12–10	25–10	8–11	27	14	R leg & foot	Re-amputation	R	—
656	6–10	17–10	23–10	17	6	R arm & hand.	Removal of metal from thumb	R	—
631	28–9	15–11	22–11	55	7	Back, l. leg and knee.	Swelling opened in r flank	–	D
663	18–8	?	7–12	111	?	Fracture both thighs, scrotum & forearm	Fell against bed on old injury wounds healed	—	D
669	18–9	14–10	31–10	43	17	R scapula, 2 wounds l. arm	Shrapnel removed from shoulder	R	—
672	28–9	7–12	10–12	73	3	Foot and ankle.	Shrapnel removed from ankle	R	—
673	?–3	5–10	8–10	over 190	3	Thigh	4 pieces of metal removed	—	D
674	5–11	24–11	25–11	20	1	R buttock	Shrapnel removed	R	—
698	5–10	7–11	20–11	44	13	Fract. l leg	Amputation.	R	—
737	9–8	17–11	29–11	112	12	R thigh	Metal removed	R	—
751	13–11	28–11	29–11	16	1	R heel	Pieces of sock and boot removed	R	—

Table VI gives the cases, 15 in all, in which tetanus is reported to have followed on an operation. There were 6 deaths, a mortality of 40 per cent In only 2 of these cases was a prophylactic inoculation given before the operation The Tetanus Committee advise that when operations are performed at the site of wounds, even if they are healed, a prophylactic injection of serum should invariably be given

ON OPERATIVE INTERFERENCE AFTER TETANUS SYMPTOMS HAVE APPEARED

TABLE VII

No of case	Date of tetanus	Date of operation	Days after onset	Nature of wound	Nature of operation	Recovered
61	15-9-16	16-9-16	1	Fract face and l arm	Bone from arm and jaw removed	R
62	4-12-16	8-12-16	4	Fracture of humerus	Sequestrum removed.	R

Table VII gives the cases, 2 in all, in which an operation was carried out on the wound after the appearance of symptoms of tetanus There were two recoveries Since the beginning of the war 52 cases of this kind have been reported, with a mortality of 40 per cent

The opinion of the Tetanus Committee is that it appears to be safer to abstain from surgical interference with the wound until the ordinary treatment for tetanus has been carried out, unless there exist other and imperative reasons for immediate operation When the symptoms of tetanus have subsided and the tissues are flooded with antitoxin, then the wound can be opened up and searched for foreign bodies or hidden collections of pus and tetanus bacilli

TREATMENT OF TETANUS BY ANTITETANIC SERUM

A. *Prophylactic or Preventive Treatment*

Among the 100 cases 61 are noted as having received a prophylactic injection of antitetanic serum in France. Ten cases are reported to have received secondary prophylactic injections in home hospitals It is evident that the recommendations of the Tetanus Committee regarding these secondary injections were only beginning to bear a promise of fruit at the end of 1916 Of these 61 cases 51 recovered and 10 died giving a mortality of 16·4 per cent Of the remaining 39 cases there is no record of prophylactic treatment in 22 although in all probability many of them received it Of these 22 12 recovered and 10 died—a mortality of 40 5 per cent The remaining 17 cases are stated to have had no prophylactic injection of any kind Of these 6 recovered and 11 died—a mortality of 64 7 per cent This may be represented shortly in the following table which also gives the results since the beginning of the war —

TABLE VIII

Prophylactic injections	Rate of mortality per cent			
	1914-15	1915-16	Aug to Oct 1916	Oct to Dec. 1916
Received	51 3	42 8	27·[illegible]	16·4
Not recorded	41 1	52·0	44·8	40·5
None given	62 5	55 5	[illegible]5	64 7

In regard to the question as to what influence if any promptitude in giving these prophylactic injections has in reducing mortality the following table gives all the available information —

TABLE IX

No of cases	Inoculated	Recovered	Died	Mortality per cent
42	On day of wound	35	7	16·6
9	One day after wound	7	2	22·2
7	Two days	7	0	—
1	Four „	0	1	—
2	More than four days	2	0	—

Of the 42 cases inoculated on day of wound the average incubation period was 48 days Of the 17 cases which are reported to have received no prophylactic inoculation the average incubation was 14 3 days.

ON THE RESULTS OBTAINED FROM MULTIPLE PROPHYLACTIC INJECTIONS.

The Tetanus Committee have laid down that four prophylactic injections should be given to every wounded soldier at intervals of seven days In the 100 cases under review the case mortality was 31 per cent It will be remembered that only 61 out of the 100 cases were recorded as having received a prophylactic injection in France

The following table represents the rate of mortality of cases of tetanus which have received one to four prophylactic injections From this table it would appear that one prophylactic inoculation is more potent than two, three, or four, but the numbers are small

TABLE X

Number of inoculations.	No of cases.	Recovered	Died	Mortality per cent
Received one	37	33	4	10·8
„ two	18	14	4	22·2
„ three.	5	3	2	40·0
„ four	1	1	0	0·0

Table XI represents the effect of one inoculation or more on the incubation period.

TABLE XI

Number of inoculations	No of cases	Average incubation period in days.
1	37	49·3
2	18	38 7
3	5	73·[illegible]
4	1	70·0

B *Therapeutic or Curative Treatment*

Out of the total of 100 cases the number treated with antitetanic serum after the onset of symptoms was 98 Two cases did not receive therapeutic treatment with antitetanic serum in England, 1 recovered 1 died The patient who recovered is reported to have had a prophylactic injection on day of wound, of the one who died there is no record. The man who recovered showed symptoms of tetanus after an incubation of 63 days, he had opisthotonos but no trismus The symptoms lasted for three days He was treated with nux vomica and strychnia. There is no reason given for his not having received specific treatment The man who died showed symptoms of tetanus on Nov 5th and died four days afterwards Very few details are given in his tetanus report but it is evident that antitetanic serum was not given owing to failure to diagnose the disease in time. On Oct. 30th an amputation of the affected leg was performed but no prophylactic injection was given at the time It is evident that in these two cases the recommendations of the Tetanus Committee were not followed.

Of the 98 cases which received serum treatment 68 recovered and 30 died Mortality 30·6 per cent

ON THE INFLUENCE OF ROUTE IN THE INJECTION OF ANTITETANIC SERUM

The Tetanus Committee in their Memorandum are of opinion "that in acute general tetanus the best method of treatment lies in the earliest possible administration of large doses of antitoxin serum by the intrathecal route." Of the 98 cases—

	Mortality per cent
3 were treated by subcutaneous injections alone 2 recovered 1 died ...	33 3
10 were treated by intramuscular injections alone 8 recovered 2 died ...	20·0
1 was treated by intravenous injection alone 1 recovered ...	0·0
2 were treated by intrathecal injections alone 2 died	100·0
There were 75 cases which included intrathecal injections 49 recovered 26 died ...	34·6
There were 23 cases which did not receive intrathecal injections 19 recovered 4 died ...	17 4
There were 15 cases which included intravenous injections 13 recovered, 2 died ...	13 3
There were 83 cases which did not include intravenous injections 55 recovered 28 died ...	33 7

It would appear from the above table that no advantage in favour of intrathecal injections emerges from the figures, as seemed to be the case in 1914–15 The numbers are too small, but are given in order to make the different analyses comparable. It must also be noted that it is the severe cases which are treated by the intrathecal route, the slight cases by the intramuscular or subcutaneous As is shown elsewhere, cases of localised tetanus tend strongly to recovery, and it is in these cases that intramuscular injections are given It is, in fact, so laid down in the Memorandum on Tetanus "In the *chronic forms of tetanus*, particularly the form of localised tetanus limited to one limb, without trismus or other sign of generalisation, there appears to be no need to resort to intrathecal injection A course of serum treatment by the intramuscular method will, in most cases, do all that is required."

It may be thought that an apology to the reader is demanded for bringing up figures that prove nothing But it may be urged that the same figures give information of some kind or another, for example, it is shown that in the latter part of the year 1916 98 per cent of cases of tetanus were treated in England by antitoxic serum, and in 75 per cent the serum was inoculated intrathecally This is of some interest to-day and may be of more interest in the future

IS THERE ANY OTHER EVIDENCE TO BE FOUND IN THE TETANUS REPORTS THAT THE INTRATHECAL ROUTE HAS ANY ADVANTAGE OVER THE OTHER METHODS OF INJECTION?

Treatment Beginning on Day of Onset of Disease	Mortality per cent.
During the period October–December, 1916 57 cases were treated with antitetanic serum on the day the symptoms declared themselves 34 recovered 23 died ..	40 3
Out of the 57 cases the following received antitoxin but not intrathecally on the day of the disease 26 cases 18 recovered 8 died	30 7
Out of the 57 cases the following received antitoxin, including intrathecally on the day of onset of the disease. 31 cases: 16 recovered, 15 died	48 4
Treatment Beginning on the Day following the Onset of Disease	
During this period 12 cases were treated with antitetanic serum beginning one day after the symptoms had declared themselves 11 recovered 1 died	8 3
Out of the 12 cases the following received antitoxin but not intrathecally one day after the onset of the disease 10 cases 9 recovered 1 died ..	10·0
Out of the 12 cases the following received antitoxin including intrathecally, one day after the onset of the disease 2 cases: 2 recovered ...	0 0
Treatment Beginning Two Days after the Onset of the Disease	
During this period 8 cases were treated with antitetanic serum beginning two days after the symptoms had declared themselves 6 recovered 2 died ..	25·0
Out of the 8 cases the following received antitoxin but not intrathecally, two days after the onset of the disease 2 cases: 2 recovered	0·0
Out of the 8 cases the following received antitoxin including intrathecally two days after the onset of the disease 6 cases 4 recovered 2 died ..	33 3
Treatment Beginning Three to Eight Days after the Onset of the Disease	
During the same period 21 cases were treated with antitetanic serum beginning three to eight days after the symptoms had declared themselves 17 recovered 4 died ..	19·0
Of the 21 cases the following received antitoxin but not intrathecally, three to eight days after the onset of the disease 11 cases: 10 recovered, 1 died	9 0
Of the 21 cases the following received antitoxin, including intrathecally three to eight days after the onset of the disease 10 cases: 7 recovered 3 died ..	30·0

It is evident that no case either for or against the intrathecal route can be made out from these figures and again, as in the last analysis, it would appear better to defer treatment for one or more days after the onset of the disease This probably only means that the severe cases are treated at once, the less severe are dallied with

THE INFLUENCE OF DOSAGE ON THE CURATIVE ACTION OF ANTITETANIC SERUM

(a) The Total Quantity of Antitoxin Given During the Attack

Out of the 98 cases—

		Recovered.	Died	Mortality per cent.
0 received	1 000 units or under	2	0	0·0
2 "	1 001 to 5 000 units	4	4	50 0
8 "	5 001 " 10 000 "	7	2	22 2
9 "	10 001 " 15 000 "	7	2	0·0
5 "	15 001 " 20 000 "	5	0	0·0
15 "	20 001 " 30 000 "	8	7	46 0
12 "	30 001 " 40,000 "	8	4	33 3
19 "	40 001 " 60 000 "	12	7	36 8
21 "	60 001 " 100 000 "	16	5	23·8
7 "	100,001 " 249 000 "	6	1	14·2

(b) The Daily Quantity of Antitoxin Given

Out of the 98 cases—

1 received	1 000 units or under	1	—	0·0
31 "	1 001 " 5 000 units	29	2	6 4
33 "	5 001 " 10 001 "	21	12	36 3
22 "	10 001 " 20 000 "	13	9	40·9
7 "	20 001 " 30 000 "	2	5	71 4
3 "	30 001 " 40 000 "	1	2	66 6
1 "	40 001 " 52,000 "	—	1	100·0

From these figures relating to dosage no useful deduction can be made They may be useful to enable a comparison to be made with the amount of serum given at different periods during the war

OTHER THERAPEUTIC REMEDIES

During this period no cases were treated with carbolic acid injections or magnesium sulphate

CONCLUSIONS

1 In the 100 cases of tetanus under review the mortality was 31 per cent

2 The ratio of the number of cases of tetanus to the wounded has fallen greatly since the beginning of the war due in all probability to a great extent to the introduction of prophylactic injections of antitetanic serum

3 The incubation period *tends to become longer*, hence there are only 12 cases reported with an incubation of 10 days or under

4 Only 10 cases are reported to have received secondary prophylactic injections of antitetanic serum in home hospitals

5 In regard to the therapeutic effect of antitoxic serum the evidence is still inconclusive.

6 The rate of mortality in generalised tetanus is 34 4 per cent, in localised tetanus 0 0 per cent

WAR NEPHRITIS

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AND
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THIS communication is based upon the study of 250 cases of nephritis which have come under the personal treatment or supervision of one of us (C E S) and upon the pathological investigation of the last 50 of these (A. T N) The figures quoted below refer to 160 of those cases whose records are available

It is proposed to deal with the subject under the headings of Clinical Aspects and Pathology, and to review the various work which has been done upon its etiology

Clinical Aspects

Seasonal incidence —Our own cases reached their maximum in the months of January and February This is contrary to the observations of other writers and is probably to be explained by an increase in the military population from which this hospital draws its sick, during these months divisional units were "resting" in the neighbourhood

Age incidence —The average age of our last 160 patients was 31 years The disease was commonest in the decade 25 to 35, 8 per cent of the cases, in which a history of previous disease could be excluded, occurred over the age of 40

Previous renal disease —A history of this could rarely be obtained Of 160 cases, 6 *certainly* and 2 probably had suffered from a previous attack of nephritis Of these, 2 gave a history of nephritis while on active service, one six months, the other 12 months previously, 4 had had acute nephritis in civil life, 2 gave histories of scarlet fever with delayed convalescence within the preceding five years

Nature of the duties on which the patients were employed — Of our 160 cases 10 per cent had never been in the front line, while the remainder had all served at the front, in many cases such service had been discontinued for a period of weeks or months before the onset of nephritis Three of our 250 cases occurred in officers The average stay in France of our last 80 cases was 7½ months, 5 cases occurred before the fourth month

Associated conditions —Some degree of bronchitis was a constant feature, it was often a serious complication, and in two of the fatal cases was responsible for death Septic infection of the skin in the form of impetigo or a superficial wound was present in 12 of our cases Trench foot was present in two cases Quinsy preceded the onset of nephritis by five days in one case (Contrast Citron [9])

Type of case —There are all varieties in the severity of the disease, ranging from the slight attack with little or no œdema to the typical and fatal case It seems possible that slight atypical or abortive cases, who suffer from an undiagnosed malaise, may recover without admission to hospital

Mode of onset —The appearance of the more striking symptoms is so impressive that it is only occasionally that the patient volunteers the statement that he had been indisposed for any time before he was compelled to "go sick." Careful inquiry will, however, in a large majority of instances elicit the information that there has been some departure from the normal health for two or three days before the onset of the acute symptoms. Such slight prodromal symptoms include headache backache, "a cold," and a feeling of fatigue after slight exertion, some degree of bronchial catarrh is practically constant at this stage Alimentary symptoms are rarely mentioned, and it is unusual for complaint to be made of any alteration of urine or micturition during the prodromal period, but some patients speak of "scalding" as having occurred from the very commencement of the illness The following symptoms and signs are found in every typical case œdema *dyspnœa, headache* Very common, but not invariable, are backache, limb-pains, slight pyrexia, and scanty micturition Probably if these patients came under observation at the earliest stage of the disease these symptoms would be more often in evidence

Œdema —This always affects the face, it may be confined to this situation or involve the whole body The positions in which it is found are, in order of frequency, face, feet, hands, lumbar region, scrotum, and abdominal wall Ascites and pleural effusions are uncommon except in those patients in whom the disease tends to run a prolonged course The duration of the œdema is very variable—usually it disappears rapidly, if the case is not seen during the first three or four days it may already be entirely absent, we have seen it disappear completely within 36 hours of the onset Associated with the œdema an almost characteristic flush of the skin is often seen, it is not a cyanosis but a red flush resembling early sunburn In our experience this appearance has been most noticeable in patients suffering from capillary bronchitis

Dyspnœa —Some degree of respiratory distress is constant Most of the patients describe the onset as quite sudden, the man may parade in full marching order without discomfort, and fall out a few minutes later, quite unable to march after the column has gone a few hundred yards Many of the men however when closely questioned, state that they have noticed gradually increasing shortness of breath for two or three days before the occurrence of the dramatic attack In a large proportion of cases this shortness of breath, slight and gradual or sudden and severe, may precede the appearance of facial œdema by several days When at rest the condition is one of hurried respiration rather than a true dyspnœa It lasts for several days and may persist after the disappearance of œdema Cheyne Stokes *respiration* is not seen except in conditions of severe uræmia. Urgent respiratory distress while the patient is at rest *may* occur if the disease is complicated by severe bronchitis or as a manifestation of uræmia Two of our seven deaths were due to sudden uræmic dyspnœa

Headache —All our patients suffered from dull headache, most commonly frontal often occipital rarely vertical This is one of the earliest symptoms and is often of long duration An increase in its severity has been noted as a herald of uræmia. We were unable to demonstrate a definite relationship between the degree of the headache and systolic blood pressure Its disappearance is accompanied by a sense of well being which cannot in our opinion be entirely due to the relief from a moderate though persistent pain

Cough —All our patients suffered to some extent from cough often accompanied by a considerable amount of expectoration the sputum being usually frothy and liquid, except in those cases which were complicated by purulent bronchitis

Backache —This is practically constant, rarely severe, it persists for several days It is localised to the loin, and does not radiate, it is variously described as a dull ache, a weight or a load on the loins

Abdominal pain is occasionally complained of, in our experience chiefly in those patients who suffer from uræmic symptoms It is transient and variable in intensity and position

Limb-pains —These are common but transient Nothing approaching in severity or persistence the "shin pains" of trench fever has been met with. This point is of some clinical importance, for in many cases of trench fever albuminuria occurs during the first few days The limb pains of nephritis are present only in the early stage of the disease, they disappear with the return of the temperature to normal

Urine —In the first days oliguria or suppression is the rule—this is usually of a few days' duration only, and is frequently followed by polyuria which persists after all obvious œdema has disappeared Frequency and scalding are not uncommon during the first few days Incontinence of urine in non-comatose patients occurred in two cases in our series This symptom has been noted by a German observer In 250 cases true dysuria with hypogastric and penile pain was present, these may have been "lower tract" affections as described by Abercrombie [5] They recovered without special medication

Albuminuria is constant at first but may be remarkably transient, it has a tendency to vary from day to day irrespective of diet changes No information as to its ultimate persistence is given by the cases of our series, for they were too short a time under observation

Hæmaturia —Naked eye examination reveals the presence of blood in rather less than half the cases Its amount is even more variable than the albumin, but it may be most persistent The microscopical characters of the urine are described under the heading of "Pathology"

Temperature —Moderate pyrexia for a few days is the rule its duration is brief and relapse uncommon In the presence of associated disease, such as sepsis or severe bronchitis, the pyrexia is more definite and sustained, but with these exceptions war nephritis may, after the few days at the onset be regarded as an afebrile disease

Pulse —The pulse rate is little altered It may rise to 90 or 100 and remain at this figure for a week or 10 days, but persistent tachycardia has been a very rare symptom In two cases it occurred without any other apparent cause

Blood pressure —The hæmodynamometer was not used in all cases and experience has convinced us of the fallacy of relying upon digital impressions in estimating blood pressure The highest record obtained was 210 mm. this was met with in a uræmic case in the presence of which complication readings of 150–180 were not uncommon In mild and quiescent cases no striking rise of blood pressure was met with

Eye changes —Captain R Graham Brown, R A.M C, kindly reported upon 35 consecutive cases The fundus was normal in 29, while in 6 slight blurring of a portion of the disc margin or papillœdema was present All these patients had facial œdema The retinal change and the facial œdema appeared to clear up at the same time No case was under observation at a sufficiently late stage for chronic changes to be manifest. Transient blindness occurred in 2 cases as one of several uræmic symptoms Difficulty in reading was complained of by a few patients early in the disease, and some of these had slight blurring of the disc, but it is doubtful whether this disability could not be explained by general causes

Complications —Only two serious complications were met with—bronchitis and uræmia The importance of the former is very great and its presence has a very adverse influence upon prognosis.

Uræmia is seen in about 8 *per cent* of the cases Its onset is usually early in the disease, it may afford the first manifestation In only 2 cases of our 160 did it occur after the tenth day The common manifestations of uræmia are torpor severe headache nausea, vomiting (always to be regarded as a danger signal) and convulsions Uræmic convulsions in this disease present several interesting features They come on with very little warning, they are very violent, they usually occur quite early in the course of the illness and paradoxical as it may seem are to be regarded on clinical experience as of good prognosis provided they are not fatal within the first few hours Our experience has been that those patients who have had severe uræmic convulsions calling for active measures and causing considerable alarm have, after a few days of semi coma, passed on rapidly towards almost complete recovery, their albuminuria has ceased, the flow of urine has been re established, and there has been a speedy return of a sense of well being Chronic uræmia, giving rise to a prolonged state of cheerful busy delirium bordering on mania, occurred in two cases who ultimately returned to apparently normal mental health

Treatment

Treatment has been mainly expectant or aimed at the removal of complications as they arose Diuretics were rarely used and seemed of no value Diaphoretics were employed in a few cases, but it is doubtful whether they had any influence on the course of the disease It is remarkable how these patients sweat without drug treatment It is the exception to find the skin dry after the first few days Hot packs were rarely used, they seemed of doubtful benefit and, by adding to risk of chill, a real danger Fluids were not restricted, but the patients were not encouraged to drink more than they desired No attempt to wash out nitrogenous material by flushing the system was made A reason for avoiding copious drinks is the effect which the intake of large quantities of fluid has upon the blood pressure Purgation was used, but was never drastic Calomel gr iii at night followed by a saline purge in the morning was the routine Occasionally an enema was employed at the commencement of the treatment

All cases were kept for three days at least on a rigid milk diet Three pints per diem were allowed After this time, if the albumin showed signs of diminishing, if blood was no longer visible to the naked eye in the urine, if the quantity of urine was normal, if the blood pressure was not raised, and if headache was not troublesome an increase in the diet was allowed—toast, biscuits, a flavouring of tea in the milk, rice milk (a fluid form of rice pudding made without eggs) In no case did the patient's condition call for a return to strict milk diet

While uræmic danger signs were present the strict milk diet was enforced The treatment of uræmia followed the usual lines—venesection, intravenous infusion of saline, and lumbar puncture The last operation is of the greatest benefit, it is necessary to perform it under chloroform anæsthesia on account of the uncontrolled movement of the patient, the removal of six or seven drachms of fluid is followed by a striking improvement The fluid is usually under slightly increased pressure, but it is possible that this is due to the anæsthesia

Opium in the form of morphia or omnopon was given freely and with benefit in uræmic cases, its diaphoretic effect was very noticeable

In the chronic form of excitement bromide, even in large doses, had little or no effect, opium had to be substituted

Prognosis

Our observation of these cases has been too short to allow any opinion as to their ultimate prognosis to be formed but certain points bearing on their immediate prognosis have been noted The coexistence of a severe degree of bronchitis is of bad omen, four cases died and the partial recovery of others was delayed greatly The coexistence of sepsis did not seem to have any adverse influence The presence of uræmic symptoms varied in significance The cases that showed great sleepiness during the first few days did as well as those who did not show this sign Uræmic convulsions, as has already been noted, if not immediately fatal, were shown by experience of several cases to be of good prognosis Persisting mental changes, which may be regarded as uræmic in origin, however, were associated with persistence of albuminuria and hæmaturia long after the normal date for their disappearance The blood pressure in the early stages gave little guidance Some patients with a systolic pressure of 180 mm Hg made as rapid a recovery as those in whom the pressure was not raised As a herald of approaching uræmia sustained high blood pressure may be regarded as of importance Pressure-readings during or immediately after a convulsion are probably of little value as they must be influenced by the muscular exertion involved in the seizure As no patient was allowed to get up before his evacuation from this hospital no information is available as to the possible return of albuminuria in non albuminous cases after apparent recovery and on the resumption of the erect posture Temporary increase of the albumin occurs commonly in cases still confined to bed without change in general symptoms and appears to be independent of changes in the diet

Pathology

The urines from 50 cases of war nephritis have been examined since February of this year Concurrently with these, 44 urines, both from normal individuals and from men who were patients in hospital, have been examined as a control

All cases of war nephritis showed casts in the urine. The casts were hyaline, granular, fatty and blood, the first two being the most common As would be expected, the more definite the clinical symptoms the larger was the number of casts Again, all cases of war nephritis showed the presence of many degenerate endothelial cells in pronounced distinction to urines obtained from men suffering with other illnes es where endothelial cells were few or absent. The presence of casts and of endothelial cells is, in our opinion, sufficient microscopical evidence on which to diagnose this form of nephritis The endothelial cells are of all shapes and sizes, but are most commonly spherical, varying from about 10μ to 35 or 40μ They show vacuoles, one or more nuclei, and are invariably granular in appearance They are in all stages of degeneration Occasionally one has been seen to bud, and it is common to find one bursting open and the intracellular protoplasm being distributed into the surrounding fluid It seems to us that these cells may be similar to the "amœba urinata granulata," described by other writers [1 2] They have never shown any true amœboid movement, however, and are exactly similar in appearance to endothelial cells from pleural effusions or to those found in the fæces in chronic cases of dysentery They stain well in moist preparations, especially if the urine sediment has previously been washed in distilled water As has been said, their presence in the urine of cases of war nephritis is invariable, nor are they found in any number in other conditions We had two cases, however, of injury in the loin, where although the kidney was not damaged microscopically endothelial cells were found in the urine These were, no doubt due to the fact that the kidney substance was disturbed by the force of the original wound shock or by toxin absorption from the wound This was confirmed by microscopical examination in one case

In mild cases of war nephritis a few only of such degenerate cells will be found in the centrifugalised deposit of the urine In a serious case many may be found in each field of the microscope (objective 6 X eyepiece) One of our cases who at first showed no definite clinical signs gave no endothelial cells in the urine, but as his symptoms of nephritis developed the endothelial cells appeared These bodies persist in the urine after the patient is apparently well—even when the urine shows no casts, and perhaps they may be of value not only in the diagnosis of a doubtful case, but also in determining whether a man has had war nephritis in the past How long they persist *we are at present unable to say*

Thirty six out of these 50 cases showed red blood corpuscles in the urine The amount of blood did not appear to indicate the severity of the attack. One of our most serious cases had very little, other clinically mild cases showed much blood The determination of the presence of red blood corpuscles was made microscopically on the centrifugalised deposit of a fresh specimen

Twenty two men had albumin in the urine, and the urines of the remainder—28—failed to give the nitric acid or boiling test for albumin

A few red blood cells a few casts, and endothelial cells in a low specific gravity urine would hardly be sufficient to give a definite and appreciable chemical test and here we would like to urge the importance of examining microscopically the *centrifugalised deposit of urine*, since in the absence of this definite examination it would be possible to miss many slight atypical or convalescent cases Renal tubule cells and cells from the renal pelvis, in all stages of degeneration were found in 9 cases out of the 50 Leucocytes, more in number than could be accounted for by the blood in the urine, were present in 3 cases

Of the series of negative cases taken concurrently with those of war nephritis, none showed either casts, or more than a very few endothelial cells Five had albuminuria, 1, who was possibly suffering from a renal calculus, showed renal pelvis cells, 5 had blood in the urine, 4 showed excess oxalates, and 7 had leucocytes Of these 44 cases 7 had definite inflammation of the urinary tract, without, however, the endothelial cells found in the nephritis cases

No cultural results were obtained aerobically or anaerobically—either from the urines or from two cases whose venous blood was examined

Blood films were made and differentially counted in 15 cases with the following results Small mononuclears ranged from 16 to 30 per cent, with an average of 22 2 per cent, large mononuclears from 8 to 18 per cent, with an average of 13 3 per cent, finely granular polymorphonuclear leucocytes ranged from 47 to 69 per cent, with an average of 62 1 per cent, and eosinophiles were from 1 to 5 per cent., with an average of 2 4 per cent "Mast" cells were not counted differentially, but were present frequently No myelocytes were observed Basophiles were found occasionally No obvious change was noted in the red cells and no parasites were observed The blood counts individually were typical of the so-called protozoal blood count with large mononuclear increase, and in addition to this most of the cases showed a slight eosinophile increase Citron[6] in his cases records an eosinophilia up to 10 per cent

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Of the total number of our clinical cases (250 in all) there were seven deaths A post mortem examination was made on each of these although, with the exception of the case described above, no microscopical investigation of material was possible, in the absence at that time of laboratory facilities The most striking feature was the small departure from normal in the naked eye appearance of the kidneys Four cases had suffered from severe intercurrent purulent bronchitis with consequent circulatory embarrassment No case showed evidence of chronic renal disease Patchy pallor of the cortex was noticed in two cases Moderate enlargement was seen in one case the others showed no macroscopic changes except *for* slight blurring of the cortical structure in one case These patients had died between the fourth and seventeenth day of illness

Ætiology.

It is proposed shortly to consider the various hypotheses that have been advanced on the etiology of war nephritis and to discuss the validity of each

Damp, cold, and exposure have been suggested by many writers as predisposing causes or even as the immediate causative agents of nephritis Hirsch at the Austro German Medical Congress at Warsaw,[2] Pick,[3] and others lay special stress on this exposure theory During the Franco Prussian War, in which a German authority states that there was much nephritis, it is interesting to note that the chief fighting took place in wet weather But against this we have the incidence in the American Civil War, 1861–63, when the cases were most frequent in the summer months Again, Rose Bradford[5] notes that cases were few in the British Expeditionary Force until March and April, 1915, and that their incidence in the summer of that year was especially high Taken together, all these conflicting observations do not favour the supposition that damp, cold, and exposure are essential epidemiological factors

Forced marches have been suggested as a possible cause by Th Rumpel[6] Certainly prolonged fatigue may produce albuminuria, but this is only transitory, and there is no evidence that this passing albuminuria predisposes to disease at a later date As a predisposition to renal disease it is as unlikely a factor as a surfeit of green apples is a factor in the cause of mucous colitis Typical war nephritis occurs among people who have been subject to no excessive muscular fatigue—e g, hospital nurses and orderlies and patients convalescing from some other disease and from injury

Streptococcal tonsillitis was suggested by Citron[7] as a cause We find no incidence of this, nor does Abercrombie in his paper[8] give any support to this hypothesis A few of our cases, but a few only, had a streptococcal infection—viz, impetigo, but the majority did not show this

Singer[9] considers that dysentery is a predisposing factor, and also that protective inoculation against enteric fever may lead to a stirring up of other organisms which had hitherto been quiescent No other writer has, as far as we can learn, considered dysentery to be a factor in the epidemiology of war nephritis, nor do our own cases lend any support to this view Again, there is nothing in the suggestion that inoculation or vaccination predisposes a man to nephritis Troops at home are not affected with nephritis, although they are vaccinated and inoculated against enteric

Lead, arsenic, and zinc have been accused of being the causative agents of this condition They can be ruled out at once The cases do not develop any of the well known symptoms caused by these poisons, and Mackenzie Wallis[10] has been able to show by ultra filtration that the urines of cases of war nephritis do not contain salts of the heavy metals

Thornley claims[11] to have isolated a small Gram negative diplococcus from the blood of cases of war nephritis As far as we can discover, this work has not been confirmed, and our own blood cultures showed no such micro-organisms Mackenzie Wallis[10] *considers that* there are powerfully toxic agents in the urines of cases, and that the organism may be ultra microscopic He has not succeeded in producing the typical disease in animals

That the affection originates in the lung tissue has been suggested by Dunn,[12] who described changes in the lungs similar to those seen in cases of *irritant gas poisoning* It is possible that the pathological changes noted by this observer were the result of the purulent bronchitis, so often a complication, to which attention has been drawn already It seems rather to be an intercurrent affection than to have any causative influence on this disease Exposure to irritant gas could be absolutely excluded in the majority of our own cases

McLeod and Ameuille[13] conclude that the disease is due to deficiency of certain elements in diet and to the consumption of excessive protein They *think that this is the* most likely explanation of transient albuminuria, and that it may contribute towards the development of the more severe cases They are supported by Gaud and Mauriac[14] who consider that fatigue and deficient food elements are the most important factors in the causation of war nephritis

In the face of so many conflicting facts and theories regarding the epidemiology of this disease it may safely be said that the cause is still unknown

The possible infective nature of nephritis is suggested by the following points *there is frequently* a febrile onset, the disease according to Abercrombie relapses in about 2 per cent of cases which is one of the characteristics of protozoal infections, the slightly raised eosinophile count and the marked increase in large mononuclears support this hypothesis regarded on clinical experience as of good prognosis provided they are not fatal within the first few hours Our experience has been that those patients who have had severe uræmic convulsions calling for active measures and causing considerable alarm have, after a few days of semi coma, passed on rapidly towards almost complete recovery, their albuminuria has ceased, the flow of urine has been re-established, and there has been a speedy return of a sense of well being Chronic uræmia, giving rise to a prolonged state of cheerful busy delirium bordering on mania occurred in two cases who ultimately returned to apparently normal mental health

Treatment

Treatment has been mainly expectant or aimed at the removal of complications as they arose Diuretics were rarely used and seemed of no value Diaphoretics were employed in a few cases, but it is doubtful whether they had any influence on the course of the disease It is remarkable how these patients sweat without drug treatment It is the exception to find the skin dry after the first few days. Hot packs were rarely used, they seemed of doubtful benefit and, by adding to risk of chill, a real danger Fluids were not restricted, but the patients were not encouraged to drink more than they desired. No attempt to wash out nitrogenous material by flushing the system was made. A reason for avoiding copious drinks is the effect which the intake of large quantities of fluid has upon the blood pressure Purgation was used, but was never drastic Calomel gr iii at night followed by a saline purge in the morning was the routine Occasionally an enema was employed at the commencement of the treatment

All cases were kept for three days at least on a rigid milk diet Three pints per diem were allowed After this time, if the albumin showed signs of diminishing, if blood was no longer visible to the naked eye in the urine, if the quantity of urine was normal, if the blood pressure was not raised, and if headache was not troublesome an increase in the diet was allowed—toast, biscuits, a flavouring of tea in the milk, rice milk (a fluid form of rice pudding made without eggs) In no case did the patient's condition call for a return to strict milk diet

While uræmic danger signs were present the strict milk diet was enforced The treatment of uræmia followed the usual lines—venesection, intravenous infusion of saline, and lumbar puncture The last operation is of the greatest benefit, it is necessary to perform it under chloroform anæsthesia on account of the uncontrolled movement of the patient, the removal of six or seven drachms of fluid is followed by a striking improvement The fluid is usually under slightly increased pressure, but it is possible that this is due to the anæsthesia

Opium in the form of morphia or omnopon was given freely and with benefit in uræmic cases, its diaphoretic effect was very noticeable

In the chronic form of excitement bromide, even in large doses, had little or no effect, opium had to be substituted

Prognosis

Our observation of these cases has been too short to allow any opinion as to their ultimate prognosis to be formed but certain points bearing on their immediate prognosis have been noted The coexistence of a severe degree of bronchitis is of bad omen, four cases died and the partial recovery of others was delayed greatly The coexistence of sepsis did not seem to have any adverse influence The presence of uræmic symptoms varied in significance The cases that showed great sleepiness during the first few days did as well as those who did not show this sign Uræmic convulsions, as has already been noted, if not immediately fatal, were shown by experience of several cases to be of good prognosis Persisting mental changes, which may be regarded as uræmic in origin however, were associated with persistence of albuminuria and hæmaturia long after the normal date for their disappearance The blood pressure in the early stages gave little guidance Some patients with a systolic pressure of 180 mm Hg made as rapid a recovery as those in whom the pressure was not raised. As a herald of approaching uræmia sustained high blood pressure may be regarded as of importance Pressure readings during or immediately after a convulsion are probably of little value as they must be influenced by the muscular exertion involved in the seizure As no patient was allowed to get up before his evacuation from this hospital no information is available as to the possible return of albuminuria in non albuminous cases after apparent recovery and on the resumption of the erect posture Temporary increase of the albumin occurs commonly in cases still confined to bed without change in general symptoms and appears to be independent of changes in the diet

Pathology

The urines from 50 cases of war nephritis have been examined since February of this year Concurrently with these, 44 urines, both from normal individuals and from men who were patients in hospital, have been examined as a control

All cases of war nephritis showed casts in the urine. The casts were hyaline, granular, fatty and blood, the first two being the most common As would be expected, the more definite the clinical symptoms the larger was the number of casts Again, all cases of war nephritis showed the presence of many degenerate endothelial cells in pronounced distinction to urines obtained from men suffering with other illnesses where endothelial cells were few or absent. The presence of casts and of endothelial cells is, in our opinion, sufficient microscopical evidence on which to diagnose this form of nephritis The endothelial cells are of all shapes and sizes, but are most commonly spherical, varying from about 10μ to 35 or 40μ They show vacuoles, one or more nuclei, and are invariably granular in appearance. They are in all stages of degeneration Occasionally one has been seen to bud, and it is common to find one bursting open and the intracellular protoplasm being distributed into the surrounding fluid It seems to us that these cells may be similar to the "amœba urinata granulata," described by other writers [1, 2] They have never shown any true amœboid movement, however, and are exactly similar in appearance to endothelial cells from pleural effusions or to those found in the fæces in chronic cases of dysentery They stain well in moist preparations, especially if the urine sediment has previously been washed in distilled water As has been said, their presence in the urine of cases of war nephritis is invariable, nor are they found in any number in other conditions We had two cases, however, of injury in the loin, where although the kidney was not damaged microscopically endothelial cells were found in the urine These were, no doubt, due to the fact that the kidney substance was disturbed by the force of the original wound shock or by toxin absorption from the wound This was confirmed by microscopical examination in one case

In mild cases of war nephritis a few only of such degenerate cells will be found in the centrifugalised deposit of the urine In a serious case many may be found in each field of the microscope (objective 6 X eyepiece) One of our cases who at first showed no definite clinical signs gave no endothelial cells in the urine, but as his symptoms of nephritis developed the endothelial cells appeared These bodies persist in the urine after the patient is apparently well—even when the urine shows no casts, and perhaps they may be of value not only in the diagnosis of a doubtful case, but also in determining whether a man has had war nephritis in the past How long they persist we are at present unable to say

Thirty six out of these 50 cases showed red blood corpuscles in the urine The amount of blood did not appear to indicate the severity of the attack. One of our most serious cases had very little, other clinically mild cases showed much blood The determination of the presence of red blood corpuscles was made microscopically on the centrifugalised deposit of a fresh specimen

Twenty two men had albumin in the urine, and the urines of the remainder—28—failed to give the nitric acid or boiling test for albumin

A few red blood cells a few casts, and endothelial cells in a low specific gravity urine would hardly be sufficient to give a definite and appreciable chemical test and here we would like to urge the importance of examining microscopically the centrifugalised deposit of urine, since in the absence of this definite examination it would be possible to miss many slight atypical or convalescent cases Renal tubule cells and cells from the renal pelvis, in all stages of degeneration were found in 9 cases out of the 50 Leucocytes, more in number than could be accounted for by the blood in the urine, were present in 3 cases

Of the series of negative cases taken concurrently with those of war nephritis, none showed either casts, or more than a very few endothelial cells Five had albuminuria, 1, who was possibly suffering from a renal calculus, showed renal pelvis cells, 5 had blood in the urine, 4 showed excess oxalates, and 7 had leucocytes Of these 44 cases 7 had definite inflammation of the urinary tract, without, however, the endothelial cells found in the nephritis cases

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Rose Bradford[15] and also Pick[4] have drawn attention to the comparative immunity of officers to war nephritis, and the former has also reported the complete immunity of the Indian troops to this disease The Indian troops suffered from all other war diseases, including bronchitis, but not from nephritis These facts suggest that British officers and Indian troops share something in common, or avoid something equally, which influences the onset of war nephritis In the British Army officers and men at the front line live under almost similar conditions all drink from the same water supplies, all breathe the same polluted air and live under the same unpleasant conditions The officers do, however, eat fresh food Even in the trenches during the Somme battle salads and fruit were seen in officers' dug outs When out at rest officers buy fresh food and vegetables and are able often to obtain new milk, in other words, they supplement their rations This applies equally well to officers living on the lines of communication or at the base, probably they have a "ration mess," but certainly they supplement their rations with fresh food The soldier, however, does not do this He draws his rations, but has little or no opportunity, even if he desires to do so, of purchasing fresh eatables The Indian troops were accustomed to eat fresh meat newly killed and not the frozen or canned meat of European troops They had fresh milk and not the tinned variety So, in common with British officers, the native troops obtained fresh food

It is perhaps a suggestive fact that in the urines of cases of beri beri Hewlett and De Korté[10] found a body similar in appearance to the endothelial cell We, too, have found endothelial cells in the urines of cases of beri beri imported into France with Asiatic labour

The hæmaturia of war nephritis, which is often persistent, is reminiscent of that which occurs in mild cases of scurvy It is interesting to note that the majority of cases had been in this country, and restricted living rations, for about seven months Experience of work with front-line battalions has impressed upon both of us the frequency of boils and skin eruptions, the scorbutic origin of which is suggested by their great improvement when a lime juice ration was instituted The objection may possibly be raised that the maximum incidence of the disease corresponds with the summer weather and the fruit season, this is met by the fact that fresh fruit and vegetables in France are beyond the financial resources or cooking abilities of the average soldier

Careful consideration of all the views discussed above leads us to think that war nephritis may be attributed to some error in metabolism due to dietary deficiency Our own observations would suggest the possibility of this, although we feel that our hypothesis is as yet by no means proved

We wish to express our thanks to Major A B Smallman, D S O R A M C, for his kindness in affording us access to the publications of other writers upon this subject

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WOMEN AND THE INDIAN MEDICAL SERVICE —The Government of India is said to be considering the advisability of employing a certain number of medical women in the Indian hospitals with a view to setting free more medical officers for military service The names of medical women prepared to offer their services are being called for

MEDICAL DISPENSARY AND WORKHOUSE SALARIES IN IRELAND —The Lurgan board of guardians have (Sept 6th) adopted a graded scale of salaries for the medical officers of that union The new scale means that the salary of Dr W W Duff (Aghalee) will be increased from £100 to £145, Dr S Agnew's (Lurgan), £123 to £160, Dr H Reid's (Montiaghs), £110 to £135, Mr T H Brownrigg's (Moira), £105 to £150, Mr J L Rowlett's (Portadown), £110 to £160, Dr G Dougan's (Tartaraghan), £100 to £150, Dr W Frier's (Waringstown), £100 to £150, Dr J S Darling's (Workhouse), £130 to £155

A REPORT ON THE
TREATMENT OF *ENTAMŒBA HISTOLYTICA* "CARRIERS" WITH EMETINE BISMUTH IODIDE,
GIVING A COMPARISON BETWEEN THE KERATIN COATED TABLOIDS AND SALOL COATED PILLS

BY D G LILLIE, M A CAMB,
LATE BIOLOGIST TO THE BRITISH ANTARCTIC EXPEDITION 1910
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S SHEPHEARD, M R C S, L R C P LOND,
CAPTAIN R.A.M.C (T)

(*A Report to the Medical Research Committee from the Mont Dore Military Hospital, Bournemouth*)

THE treatment of the 104 cases dealt with in this report was carried out in a special ward set apart for the purpose. The cases were under the care of one medical officer in order to keep the conditions of treatment as uniform as possible Both forms of the drug were given in doses of 3 grains per day for 12 consecutive days without any additional treatment The tabloids and pills were given entire as a full dose during breakfast We have considered a case to be cured when he has had at least six or seven negative tests over a period of not less than seven weeks from the termination of his course of treatment The last one or two tests were made at the Barton Convalescent Depôt The great majority of the cases, however, had many more tests some were examined almost daily and were under observation for nearly three months after the end of treatment

First Course of Treatment

The number of men treated with one course of the keratin coated tabloids supplied by Burroughs, Wellcome and Co was 79 and the number of men who were given one course of the salol coated pills prepared by Allen and Hanburys was 25

We have found it advisable to divide these two sets of men into those who had injections of emetine hydrochloride before entering hospital and those who did not receive this treatment The results are as follows —

Cases without emetine injections —Forty five men were given one course of the keratin-coated tabloids and 29 were cured—i e, 64 5 per cent

Seventeen men were given one course of the salol-coated pills and 12 men were cured—i e, 70 per cent.

Cases with emetine injections —Thirty four men were given one course of the keratin-coated tabloids and 12 were cured—i e, 35 per cent

Eight men were given one course of the salol-coated pills and five were cured—i e, 62 per cent

Second course of treatment —Twenty four men who had relapsed after one course of the keratin-coated tabloids were given a second course of the same form of the drug and four were cured—i e, 16 6 per cent

Fourteen men who had relapsed after two or three courses of the keratin coated tabloids were treated with one course of the salol coated pills and four were cured—i e, 28 5 per cent

Effect of the Time Interval between the Onset of Disease and Treatment

The object of this part of the inquiry was to ascertain whether those cases which relapsed after treatment could be shown to be "carriers" of longer standing, in whom *E histolytica* had become better established and consequently harder to cure In order to make certain, as far as possible, that the onset of disease referred to was that of amœbic dysentery, only those patients were included under this section whose blood failed to agglutinate *B dysenteriæ* Shiga and *B dysenteriæ* Flexner

Cases without emetine injections —Out of 19 men who were cured by emetine bismuth iodide (E.B I) 7 (36 8 per cent) had an interval of over 20 weeks between the date of onset of their dysentery symptoms and the date on which they received E B I treatment The average interval for the 19 cases was 19 weeks

Out of 14 men who relapsed after treatment with E B.I 8 (50 7 per cent) had an interval of over 20 weeks between the dates of onset and treatment The average interval for the 14 cases was 22 weeks

Cases with emetine injections—Out of 12 men who were cured by E.B.I. treatment 10 (80·3 per cent) had an interval of over 20 weeks between dates of onset and treatment The average interval for the 12 cases was 29 weeks

Out of 14 men who relapsed after treatment with E.B.I. 11 (78·5 per cent) had an interval of over 20 weeks between the dates of onset and treatment The average interval of the 14 cases was 42 weeks

Influence of Other Factors

Vomiting—Out of 46 cases cured by the keratin-coated tabloids 40 vomited during treatment—i e 87 per cent The total number of days on which the 40 vomited was 288 The average number of vomiting days for those men who vomited gives a convenient coefficient for purposes of comparison—i e , 7

Out of 21 cases cured by the salol pills 14 vomited during treatment—i e , 66 per cent The 14 who vomited had 53 vomiting days—i e , vomiting coefficient 3 7

Out of 45 cases who relapsed after the keratin-coated tabloids 37 vomited during treatment—i e 82 per cent The 37 who vomited had 333 vomiting days—i e , vomiting coefficient 9

Out of 18 cases who relapsed after the salol coated pills 14 vomited during treatment—i e , 78 per cent The 14 who vomited had 63 vomiting days—i e , vomiting coefficient 4 5

Loss of weight—Out of 46 men cured by keratin-coated tabloids 24 lost weight—i e , 52 per cent

Out of 21 men cured by salol-coated pills 7 lost weight—i e , 33 per cent.

Out of 45 men who relapsed after keratin-coated tabloids 18 lost weight—i.e , 40 per cent

Out of 10 cases who relapsed after salol-coated pills 5 lost weight—i e , 50 per cent

Effect of age on curative results—The average age of 38 cases cured by keratin-coated tabloids was 27 6 years 11 men out of the 38 were over 30 years of age

The average age of 38 cases which relapsed after keratin coated tabloids was 28·9 years 11 men out of the 38 were over 30 years of age

The average age of 17 cases cured by salol-coated pills was 28 7 years 4 of the 17 were over 30 years of age

The average age of 17 cases which relapsed after salol coated pills was 28 4 5 of the 17 were over 30 years of age

Effect of age on vomiting—36 men under 25 years treated with keratin-coated tabloids had 271 vomiting days—i e , vomiting coefficient 7 5

26 men over 30 years treated with the same tabloids had 157 vomiting days—i e , vomiting coefficient 6

7 men over 40 years treated with the same tabloids had 22 vomiting days—i e , vomiting coefficient 3 1

Conclusions

The conclusions which we think may be drawn from the foregoing facts are as follows —

1 (*a*) That "carriers' of *E histolytica* who had not had any injections of emetine hydrochloride were cured to the extent of 78 per cent by two courses of the salol-coated emetine bismuth iodide pills (*b*) In the case of men who had had emetine injections 72 8 per cent. were cured by two courses of the salol coated pills (*c*) In the case of men who had not had emetine injections 70 per cent were cured by two courses of the keratin coated tabloids (*d*) In the case of men who had had emetine injections 45·4 per cent were cured by two courses of the keratin coated tabloids

The difference between the percentages in (*a*) and (*b*) are within the range of experimental error and need not be considered But in (*c*) and (*d*) the difference is too great to be ignored This difference may be due to variation in the quality of the keratin-coated tabloids, but such a defect would be common to both cases which had received injections of emetine and those which had not. It is generally admitted that certain carriers of *E histolytica* are not cured by emetine in any form and it may be, as Mr Dobell suggests that these cases become segregated in (*d*) It seems possible that the difference in the two percentages may be due to the injections of emetine rendering the carriers ' less liable to be cured by E.B I

For comparison with the above percentages of cures by a maximum of 72 grains of E B I carried out in the special ward we give the number and percentage of cures in the other wards of this hospital The number of grains of E.B I which these cases received varied from 38 to 200 A case was regarded as cured after not less than 5 negative examinations over a period of not less than 5 weeks after the end of treatment The last test was made at the Barton Convalescent Depot. Out of 160 cases treated 142 were cured—i.e 88 7 per cent.

2. There is no evidence that the length of time between the dates of onset of dysentery symptoms and the treatment has any effect upon the chances of cure by E.B I

3 There is no ground for the belief that the vomiting diminishes the chance of cure by the E B I treatment There is nearly as much vomiting among the cases which are cured as among those which relapse.

4 The age of the patient has no effect upon the chance of cure by the drug But there is evidence to show that men over 40 years of age vomit less while undergoing treatment

5 The salol coated pills are a distinct improvement upon the keratin coated tabloids from a curative point of view They also cause less vomiting and loss of weight

In conclusion, we express our hearty thanks to Temporary Honorary Captain A C Inman, R.A.M C , Mr W O Redman King and Mr A G Thacker for making some of the examinations for us and for help in many ways To Lieutenant-Colonel T H F Clarkson R A.M C , officer commanding, Mont Dore Military Hospital, Bournemouth, we are indebted for permission to publish this report

THE TREATMENT OF FUNCTIONAL CONTRACTURE BY FATIGUE

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ONE of the most striking and obstinate of the objective disabilities displayed in the functional war neuroses is muscular contracture The majority of the functional disorders met with are due to the absence or diminished activity of a normal function, and are easily and rapidly curable by suggestion and re-educative measures Contractures on the other hand form part of a group of cases dependent not so much upon the absence of a normal function as upon its excessive and disordered activity As a general rule, they are not very amenable to treatment by suggestion and re-education. —

The object of this paper is to describe a method which the writer has used in dealing with this type of war neurosis He has seen no reference to this treatment in the literature, and, as far as he knows, it has not been used by others The advantage of the method is that once a diagnosis of functional contracture has been made no special experience is required in the carrying out of the treatment

In the cases which have come under my care this treatment has invariably proved successful in the course of a few days although most of them had been treated without benefit for long periods in various hospitals by other methods The principle of the treatment simply consists in *producing a condition of fatigue in the muscles responsible for the contracture* This is obtained by continuous passive movements in a direction opposed to the normal action of the contracted muscles A good deal of force is often necessary in the early stages of the treatment but as time goes on the spasmodic return of the muscles becomes slower and weaker until finally a limp, toneless, and fatigued condition is brought about The offending muscles are then no longer able to produce the deformity for which they were responsible

In the case of the more powerful muscles it may be necessary to continue the forcible movements for many hours before the condition of fatigue results, and relays of men must be 'told off ' to relieve each other, so that the muscles may get no opportunity of recovering their tone. In my own wards I have been in the habit of getting patients to assist in the work and in particular I find it helpful to make use of those who have themselves been cured by the same kind of treatment

It is always my custom carefully to explain matters in the simplest language to the patient before commencing the treatment I describe to him the nature of a spasm and tell him that once it is relieved he will be able to bring into action opposing muscles which are now unable to perform their functions on account of this persistent spasmodic contraction

Illustrative Cases

It will be seen from the description of the cases given below that many of them have been suffering from these contractures for a great length of time Almost every case has been treated by one or all of the following methods fixation in splints electricity, passive movements, and suggestion with or without hypnosis In some cases the fixation had been effected under general anæsthesia

Case 1 —J D aged 28 Had been fighting in France from August 18th, 1914 and had twice previously been wounded On July 14th, 1916 he was wounded a third time, a machine-gun bullet going through the fleshy part of the left forearm The hand immediately became clenched and continued so after the wound had healed and the dressings had been removed The fingers could be forcibly opened but became clenched again immediately they were released He was treated by electricity massage, passive movements and fixation for weeks together in a straight splint, but up to the time of his admission to Maghull Military Hospital on April 18th 1917, no improvement had resulted

Two days after admission treatment was begun The condition was thoroughly explained to the patient and he was told that after fatiguing the flexor muscles to such an extent that they would no longer be able to pull the fingers into the clenched position the antagonistic muscles on the back of the forearm would be able to perform their work. The second stage of the treatment then followed For six hours without interruption the fingers were forcibly opened and opened again directly they closed into the palm of the hand After a few hours the fingers returned more and more slowly, till at last they remained straight out in the extended position

The following morning the fingers were still straight out and the condition of spasm has never returned At first the extensor muscles were very feeble in their action but improved daily When discharged from hospital on July 2nd 1917, the patient s hand was as strong and useful as it ever had been

Case 2.—J D , aged 20 was wounded by a rifle bullet on July 10th 1916 the bullet going through the fleshy part of the back of the neck. The wound healed satisfactorily and the patient was discharged from hospital on Oct 1st 1916. Two weeks after returning to his depôt there was a Zeppelin raid and the troops were turned out in the middle of the night In the morning his neck was found to be twisted round and bent over on to his left shoulder After treatment in various hospitals for several months, fixation in the corrected position by plaster of Paris was resorted to but the deformity returned immediately the bandages were removed.

The patient was admitted to Maghull on April 18th, 1917 There was strong spasm of the left trapezius and right sterno-mastoid muscles causing the neck to be drawn down on the left shoulder and rotated The deformity was easily corrected under hypnosis but the condition returned A week after admission the neck was forcibly straightened and straightened again as fast as it returned to its old position After some hours, the offending muscles were in a condition of fatigue, and the neck remained straight The following morning a slight return of the deformity was noticed, and the procedure of the previous day was repeated From that day the neck remained straight and the condition did not return The patient was discharged from hospital on July 2nd

Case 3 —F C aged 27 was wounded in left forefinger on July 18th 1916 by machine-gun bullet Again wounded on Feb 18th 1917 on back of right knee by piece of metal, and remained for 36 hours in a shell hole before being picked up A few weeks later he noticed that he was unable to use the left hand and a note on the medical history sheet, dated March 24th states that the hand was in a position of ' main en griffe " He was admitted to Maghull Hospital on June 6th 1917 Two days after admission the fingers were forcibly straightened as in Case 1 After some hours the deformity failed to return, and from that time onwards the hand has not come back to its abnormal position

Case 4 —C M aged 32, was buried by a shell on August 2nd, 1916 He was not wounded but was extensively bruised about the back He remained constantly in bed till February 1917 Up to that time any attempt to move his legs brought on severe tremors He was then allowed up and efforts were made to get him to walk However any attempt at walking involved kicking one foot with the other As a result of this his ankles became so bruised that it was necessary to pad his feet with cotton wool

On admission to Maghull on June 12th 1917 it was noticed that one leg was crossed over the other and that the adductor muscles of the thigh were in a state of spasmodic contraction More especially was this the case on the right side The thighs could not be separated without using a good deal of force Obviously this spasm had to be reduced before walking could be attempted

The patient was laid on his back and the thighs were forcibly separated, each leg being pulled by a man The separation was repeated as quickly as the thighs met again Three days' hard work of four hours a day were necessary before the spasm was fully reduced. On the fourth day the patient was able to walk with assistance On the sixth day he walked a distance of over a mile without help and the spasm has never returned

Case 5 —W H aged 37 was knocked over by a bursting shell in September 1916 For some months he was unable to walk or even to stand, there were general tremors and his left foot was fixed in a position of marked flexion On admission to Maghull on Dec. 20th 1916 he could not walk without assistance the sole of the left foot was drawn up by spasmodic contraction of the flexor muscles of the front of the leg, and his weight when treading on the left foot was borne entirely on the heel He was treated by repeatedly extending the foot against the resistance of the contracted muscles After some hours the spasm of the flexor muscles disappeared and the foot could be moved without resistance as desired He quickly walked quite naturally and was discharged on May 11th 1917

Case 6 —E M , aged 29 was wounded by a rifle bullet on June 4th 1915 The bullet entered through the intraspinous fossa of the right scapula and passed out through the pectoralis major just internal to the head of the humerus The patient stated that an operation was performed for joining the nerves two months later and that the wound became septic, necessitating further operations for the purpose of drainage Note in medical history sheet states: 'Since August, 1915 the arm has been fixed to the side and every attempt to move it evokes strong muscular spasm The elbow is extended by contraction of the triceps For a long time the fingers were tightly flexed and the wrist extended, but this condition cleared up in March 1917 only to recur in May " A further note dated June 8th 1917 states ' Electrical massage gives free movement, but spasm returns in half an hour

The patient was admitted to Maghull on June 12th 1917 The arm was tightly held to the side. It could be forcibly abducted but sprang back like the blade of a clasp knife, on being released The arm was held rigid by the triceps muscle and the elbow could not be voluntarily flexed there was however, free movement of the wrist and fingers

Treatment was begun three days after admission At first the elbow was forcibly flexed and this operation was repeated for some hours until at last all trace of spasm had disappeared The following day, the forearm being still freely moveable at the elbow the arm was forcibly abducted and this movement was repeated again and again until after some four or five hours the limb could be held voluntarily away from the body A good deal of force had to be used at first so much so that it was necessary for one man to steady to body while another forced the arm away from the side This forcible abduction of the limb from the body was repeated day after day till at the end of the week the patient was able to lift his hand to the back of his head, all trace of spasm having disappeared.

Case 7 —T W , aged 24, was buried by a shell in February 1915. He was unable to walk had general tremors, and was kept in bed for about four months. On getting up it was noticed that his feet were strongly inverted so that on standing all his weight rested on their outer edges An attempt was made to correct the deformity by means of splints but the condition was quite unimproved at the end of three months Strong faradic currents, massage and passive movements were then tried but with equal lack of success Finally he was fitted with special boots designed to tilt the foot over into the correct position by means of leather wedges The condition, however still remained unimproved

The patient was admitted to Maghull on Nov 18th, 1916. On admission the feet were strongly inverted and a good deal of force was necessary to straighten them He walked on the outer edges of his feet with the help of two sticks He was treated by exercises, passive movements and suggestive and re-educative measures. He improved up to a certain point and after some months he could get about without the help of sticks The condition of claw foot," however, still persisted, although not to the same marked extent as on admission

Treatment by fatigue was commenced at the end of June For eight hours without intermission the feet were forcibly flexed and everted At the end of this time the deformity had entirely disappeared but returned to a slight degree the next day Another sitting of eight hours effected a complete disappearance of the spasm, and the contraction has not returned He now walks on the flat of his feet and his gait is perfectly normal He was discharged on July 20th 1917

Case 8 —A. W aged 27, was wounded on Oct 22nd, 1916 by a shrapnel bullet which went through the fleshy part of the back of the left forearm The hand immediately became clenched and remained so although the wound healed satisfactorily For four months the fingers were kept straight by means of splints, but every time they were taken off the contracture returned.

On July 5th 1917 he was sent to Maghull. The fingers were tightly clenched and had obviously not been opened for many weeks for when forcibly straightened the skin on the palmar surface of the hand and fingers was found to be in a sodden condition and emitted a most offensive odour A good deal of force had to be used to get the fingers open partly owing to fibrous adhesions along the course of the flexor tendons, and they contracted into the hand again directly they were released Repeated forcible extension was persevered with for many hours for two consecutive days At the end of this time the fingers remained out limp in the extended position and the contracture has not returned

Some General Considerations

This form of treatment follows the lines of the general methods employed at Maghull The nature of the disability is explained to the patient and he is made to understand the curative measures as they are carried out. That this is a distinct advantage there can be no question, for not only can the patient in many cases coöperate in his own cure, but he in his turn helps later on in the treatment of others Thus a curative atmosphere is developed in the ward the value of which it is impossible to overestimate (See *Note* at end)

Further advantages of the treatment are —

1 No apparatus of any kind is required and no specialised knowledge on the part of the physician is necessary

2 It is accessible to all, since the personal influence of the physician does not operate to the same extent as in treatment by purely suggestive methods That such personal influence must come into play to some degree cannot be denied, for although the patient's cure is brought about in the first instance by a purely physical means, psychical factors must operate once fatigue has worn off It is probable, however, that the all important factor which conduces to the permanency of the cure is the actual demonstration to the patient that the contracture no longer exists, it having been dispersed by a method which he has no difficulty in understanding

3 It is applicable to cases which have been treated previously without success by other methods, and its success is not prejudiced by these previous failures It therefore appears to be preferable to suggestive measures

4 The process by which the contracture is actually eliminated is a physiological one and is not subject to interference from psychical factors—e.g , the degree of the patient's faith that he will be cured

5 Any fear of a relapse is distinctly reduced by the patient's knowledge both of the mechanism by which the disability was produced and of that by which he was cured

6 Such a method does not undermine the patient's self-respect in the slightest degree , in fact, in most cases it may increase it by deepening his self knowledge and convincing him that his disability is a natural phenomenon and not something occult

Cases 6 and 7 are of special interest in that they had both been in hospital for more than two years before treatment by fatigue was resorted to In each case the disability was cured in less than a week.

I am told that the condition called "claw foot" is the most common of the contractures met with in this war, and that it is particularly intractable. Many are sent out of hospital fitted with an 'inside splint," and remain for months or even years with little or no improvement It seems highly probable that such cases could be cured in a few days by the method above described

The idea suggests itself too, that this method might be applicable to those contractures met with in civil practice in the grave forms of hysteria.

Objective and Subjective Symptoms

As this paper deals only with the treatment of muscular contracture, no mention has been made of any accompanying subjective symptoms Such troubles, however, were present in more or less marked degree in all the cases It is very doubtful if a hard and fast line can be drawn between "subjective" and 'objective' symptoms

From the physician's standpoint it may be easy but to the patient it may matter little whether his trouble expresses itself to others through a physical symptom or is known only to himself In fact, the distress caused by the "subjective" troubles is often greater than that due to the "objective" troubles Doubts, fears, hesitations, obsessive thoughts of all kinds often oppress the patient who *seems* to be suffering merely from muscular contraction To allay these is the physician's plain duty Indeed, the future may show that in the causation of these "objective" troubles psychical influences have played the major rôle, and until investigation has cast more light upon this fascinating problem we must not speak too hastily of purely 'objective" symptoms Attention should always be paid by the physician to the individual history of the case, and especially to the way in which the patient himself regards his trouble If this is done, not seldom will the patient leave hospital a wiser and stronger man in that he knows himself better

The fundamental principles underlying the form of treatment above described have not been discussed It is hoped, however, that the whole subject will be elaborated in greater detail in a subsequent communication In conclusion, I wish to express my thanks to Major R. G Rows officer in charge of the Military Hospital, Maghull, for permission to publish these notes

Note —It may be pointed out that this curative atmosphere is of the greatest help to the physician in his treatment of the purely subjective troubles met with in the psycho-neuroses It is sometimes forgotten that "psychical infection" which is so much feared by those who deprecate the treatment of neurasthenics in special hospitals often has a beneficial effect in that patients who are getting better are able to convince others suffering from similar troubles that their own cure will come about in due course

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MEDICAL FEES UNDER THE MIDWIVES ACT —After consultation with the Central Midwives Board the Local Government Board for Scotland has fixed the following scale of fees for medical assistance in case of emergency to be paid by local supervising authorities to medical practitioners under Section 22 (1) of the Midwives (Scotland) Act 1915 —(a) Fees to medical practitioners, covering one subsequent visit For major operative interference, £1 1s , for special anæsthetist if required, 10s 6d , for minor operative interference—e g suturing the perineum day, 7s 6d night 15s for all other cases day, 5s night 10s 6d A day visit is construed as occurring between 9 A M and 9 P M (b Mileage rates (per double mile) Normal mileage—i e distance between practitioner's residence and patient's residence along a driving road 1s special mileage—i e distance between practitioner's residence and patient's residence along a path or road not used for vehicular traffic or across moorland 2s 6d water mileage—i e distance by sea or loch between the points of embarkation and landing having regard to the length of an average voyage 4s Where the patient's residence is within a mile of the practitioner's residence no mileage fee is to be charged

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ACTIVE TREATMENT IN ESTABLISHED ECLAMPSIA

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IN this paper I propose to confine myself to the active treatment of the fully-established condition

Methods of treatment had best be considered under two headings, palliative and radical or operative, and naturally we have a much wider range of choice in the former than in the latter class As a palliative measure sedatives are urgently indicated , this point is agreed on by all Morphia is probably the best, and is certainly one of the best of these, but it must be properly used , Bumm and Jardine, however, are averse to its use I have found the following a safe and efficient method of administration as soon as possible after the case comes under observation give gr ½ as an initial dose, if necessary give another gr ¼ in two hours' time, and if necessary repeat the smaller dose in another two hours but give no more than the three doses Mostly a satisfactory sedative result is obtained , if not, more radical measures will be necessary If used carefully as described I have never seen any harmful results accrue from its administration, nor have I ever seen any evidence of its supposed damaging effect on renal tissue Chloroform is most valuable as a sedative although such authorities as Tweedy and Ward are strongly opposed to its administration They hold the drug responsible for harmful hepatic lesions, and liken its administration to that of an antipyretic in a case of fever It is best as an adjuvant to operative treatment , if administered in big doses and over a long period it is certainly deleterious, and then may cause liver lesions very similar to those found in established eclampsia Therefore in giving it give as little as possible to produce the sedative effect aimed at Chloral hydrate with potass bromide are of more use for general restlessness between fits than for actual convulsions I have never seen any real sedative effect from these drugs alone in eclampsia Paraldehyde, on the other hand, I have always found sound and absolutely safe Two drachms rectally, with repetition of half that dose if necessary at two-hourly intervals, is usually as efficient as the largest dose of morphia and is without any of the contra indications of that drug I am strongly of opinion that paraldehyde has not yet reached its proper place in professional estimation

Great attention is to be paid to the general surroundings of the patient make only one and that one a complete pelvic examination then leave the patient in peace, lest by unnecessary pelvic stimulation fresh fits be set up

In general terms, then, exclude everything acting unduly on the visual, aural, tactile, or other receptor systems and the attaining of these desiderata will include good nursing, a suitably warmed and darkened room, and experienced attention Stroganoff, of Petrograd, has of late perfected sedative treatment, space forbids a full account of his methods but by paying attention to all these factors and details in recent years he has managed to reduce his death-rate to 6 per cent , which is quite a wonderful figure, and other obstetricians who have followed the details of his treatment also quote much improved results Some writers recommend circulatory sedatives and vaso-dilators, as hæmorrhages in various organs are of such frequent occurrence in this disease, but I have never used them, as they can have no important place in treatment Zinke uses veratrum viride and speaks well of it, while hydrate of amyl is used by Hürle and others with improved quoted results, but my personal opinion is as stated.

Elimination must play a large part in any system of efficient treatment the stomach and bowel must first be thoroughly washed out and then a hydragogue purgative administered In this respect mag sulph , grs 60 daily or pulv jalap co , grs 90 as required, will be found the most efficient , croton oil I have found disappointing and of little purgative value in these cases, while Jardine has reported a case where œdema glottidis followed its exhibition By these means the alimentary tract—a possible source of toxin manufacture—can usually be satisfactorily cleared out Diaphoresis usually gives excellent results, but the pulse must be watched, although I have never seen any collapse during this The hot pack or hot-air bath are the most useful agents in the matter,

Now the toxic substances are circulating in the blood, and by withdrawing a certain amount of blood a certain amount of toxin will be abstracted, while if fluid be introduced to replace the abstracted blood the remaining toxin will be diluted and at the same time the kidneys stimulated to more active excretion These conclusions have been substantiated in practice and in a case of normal severity 15 to 20 fl. oz of blood may safely be withdrawn from a median basilic vein, while at the same operation 2 to 3 pints of normal saline may be introduced into the vein

Jardine and others at first used sod acet on account of its supposed diuretic action, but they quickly found that normal saline was just as effective Generalised œdema is usually held as a contra indication to transfusion, but I have not found it so , however, œdema of the lungs certainly is, and with such a condition present saline should certainly be withheld lest the œdema be accentuated and the patient literally drowned If the case be less urgent the rectum will be found a most useful channel of administration I have no doubt as to the efficacy of this line of treatment, and I have seen rapid and great improvement in almost every case in which it was tried, and certainly in every case of moderate severity These are the main lines of sedative treatment as at present practised, and we can now consider the more radical or operative methods and the indications for their application

Before discussing the commonly employed forms of operative treatment, I shall remark on certain procedures which have never become popular mostly for reasons which will be obvious Renal decapsulation, the first of these, was introduced by Edebohls, and has at times been practised and recommended by various American and European obstetricians of repute It aims at relieving renal congestion but as this is only an accompaniment and certainly not a cause of eclampsia its basis is obviously unsound. It is typically an operation which is likely to do far more harm than good I have never seen it performed, and never intend to perform it personally

Sellheim s operation of amputation of the breasts (the supposed place of origin of the causative toxic substance) must rely on the accompanying loss of blood for any good that may ensue It is a farcical procedure, and is not seriously regarded at the present day To empty the uterus, however, is the keystone of our operative efforts, and is a most rational procedure A safe rule in practice is this unless a case of eclampsia be showing immediate, speedy, and considerable improvement by palliative treatment, empty the uterus at once Consider only the mother's interests, and entirely disregard those of the fœtus Bumm quoted 30 per cent mortality with expectant treatment, but since 1901 he has delivered as soon as possible after the first fit, and now reports a mortality of 2 per cent —truly a changed figure Most obstetricians will agree with me in recommending this line of treatment, although Ballantyne and Stroganoff, amongst others, still advocate expectancy In most cases labour will have set in, and if so, the uterus may be left to empty itself, possibly with the help of forceps, but unless some strong indication be present—e g , extreme collapse—no rough method of haste must be employed However, if dilatation be too slow, and the eclamptic condition becoming worse, operative cervical dilatation is called for

Forcible dilatation by hand or by Harris's dilators must be done if at all only with very great care, as so much operative shock is caused by such a procedure In such a case I strongly recommend incising the cervix , the accompanying loss of blood is of benefit and full dilatation is immediately secured Again, any necessary intra uterine manipulation may now be proceeded with , of these latter version and forceps will be the most often called for, and version will be indicated, especially when speed is required—e g , when a fœtal heart be heard

When the uterus is emptied as described, and unless the case be very grave and far advanced, immediate and continuous improvement will be noticed and recovery will be rapid, contrasting strongly with the uncertain and anxious state of affairs when purely expectant treatment is relied on Cæsarean section has been employed in only a few cases to empty the uterus, and the cases are too few and the results too uncertain yet to speak definitely of it. The maternal mortality is roughly about 50 per cent in published cases, so that *prima facie* the operation does not recommend itself Unless for mechanical reasons—e.g , contracted pelvis—I can see no prospect in performing the operation for eclampsia

These, then, are my conclusions regarding the active treatment of eclampsia , I present them in no dictatorial spirit, but merely as the result of recent clinical observation and study

Cardiff

TWO CASES OF GUNSHOT FRACTURES OF THE MANDIBLE WITH LOSS OF SUBSTANCE

BY RICHARD J GREEN, L D S ENG

THE necessity for efficient treatment of fractured jaws grows more urgent every day Deformity of the face means, in many cases, unhappiness, but is, together with an impaired masticating action, nearly always avoidable. The treatment is, in most cases, better left to the dental surgeon, who, by his training, is particularly adapted to make use of mechanical appliances to achieve the best result, and knows the great importance of correct articulation

I wish to emphasise this most strongly, because during hospital practice and work with the South African Field Forces I have so often seen bad results due to lack of special training on the part of the general surgeon

Too often in busy hospitals the old four tailed bandage is made to serve, and wiring of the jaws, so much practised by the general surgeon, often ends in the "open bite," or leaves the mandible considerably deflected to one side or the other, altering the appearance of the patient. It is in war time particularly that the dental surgeon should be encouraged by having many hospitals for gunshot fractures of the jaws only This field of surgery is a small one and the manipulative skill of the dental surgeon is high

CASE 1 —Private ——, aged 18 *History* The patient was hit by a machine gun bullet at the close range of nine yards on April 18th, 1915 The bullet passed through the mandible immediately behind the mental foramen on the right side, carrying away a large piece of bone and causing much splintering It struck his teeth with force, and in its deflected course carried away the crowns of all his teeth (with the exception of the right upper and lower wisdom) the anterior third of his tongue, his superior maxillary bone on the left side, and the corner of his mouth, together with a piece of cheek He lay partly unconscious for nine hours, was taken to a base hospital, and a four tailed bandage was applied He was sent to England 12 days afterwards, on April 30th On admission the condition of his mouth was very bad He had a swollen tongue and lips, an extremely sensitive upper jaw, and the exposed pulps of many teeth all bathed in a pool of pus He was nervous but otherwise in fair condition

First operation (six weeks after admission, June 11th) —(It will be seen that no form of wire splint attached to teeth was possible he had no teeth, and no splint in the form of a Gunning could be used, because half his superior maxilla had been shot away and was extremely sensitive) I decided to plate the lower jaw with silver No 8 plate and fasten it in position with three silver plated brass screws The plate was 1¼ in in length, shaped rather like a cradle, but open at the ends, ¼ in high on the buccal surface but only 1/16 in on the lingual (Fig A) The screws were ¼ in long and of a very small gauge During the operation I removed some large sequestra and fibrous attachments The mandible was considerably deflected downwards and to the right side I applied a little pressure and forced the jaw into correct position By means of a cable attachment to a small electric motor, and using spear and rose head burs, I drilled the necessary screw holes into the jaw bone avoiding the inferior dental canal, and fastened the plate in position, which firmly held the fractured ends He was a lively patient, so the sister in charge suggested a further protection in the form of a chin and jaw frame of perforated wire gauze, edged with rubber strapping

FIG A

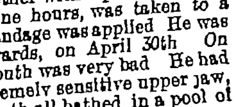


Plate seen from the lingual side.

Second operation (August 25th, 1915) —I removed the plate and his "middle line" had been preserved, which is my chief reason for reporting this case, as I do not think by any other method it could have been successful I extracted all the roots of his teeth one week afterwards, and freed the upper lips of its cicatricial attachment to the alveolus, thus making a false sulcus

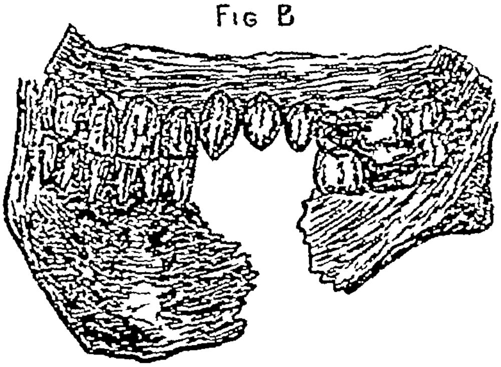
In December, 1915, he complained of pain in his left maxilla I found he had suppuration of his left antrum of Highmore I opened it under novocaine, and packed with gauze dipped in tincture of iodine, B P strength This was left for 48 hours and then removed After syringing for seven days with glyco thymoline it was allowed to close and all discharge ceased Of 17 cases of suppuration of the antrum of Highmore this case cleared up soonest I believe this method should always be tried first before tubes or something more radical is attempted

Six months after the extractions the dentures were inserted but as the patient complained of a tingling sensation on the right side of the mandible I opened up the inferior dental canal under novocaine, injected cocaine into it, dragged the nerve outwards without causing pain, and cut off half an inch, the tingling sensation did not recur He was discharged in March, 1916

CASE 2 —Private ——, aged 19 (Wounded April 18th, 1915) *History* A bullet at a range of 150 yards struck the lower part of the thorax on the left side, passed upwards, apparently without injury to his lungs, and came out near the middle of his left clavicle It then struck his mandible (probably broadside on) in the region of his premolar teeth carrying away 1¼ in of bone, entered his mouth and passing over his lip without causing injury, was caught in his hand On admission (April 30th, 1915) there was a large sinus, a copious discharge of pus, no pain, and the jaw was very much deflected downwards and to the left side

Method of attaching appliance —Four "Angle bands" were attached to the patient's 12 year lower molars and 6-year old upper molars as in Fig B These bands are gold plated with nut and thread for tightening purposes and with a stud to which one can attach ligatures To the studs I attached a figure-of 8 wire ligature on each side of his jaws and using pressure held the jaws in proper position—the teeth intercuspidating—tightened the ligatures, and kept the jaws closed in this position for ten weeks The patient was fed with liquid diet through the space left by his left lower canine and premolars which had been carried away Many sequestra worked out the sinus healed, and strong bony union took place no shrinkage occurred after the removal of the bands, his teeth intercuspidated, and his middle line was correct

FIG B



Angle bands in position with stud screw and nut figure-of-8 wire ligatures attached similar bands on opposite side of jaws

Had I wired the jaws in this case I think it probable that the fine splintered pieces in contact would have been disturbed and fibrous union would have resulted

Bandaging wiring and fastening teeth together by means of ligatures tied to adjoining teeth are crude relics of the past the general surgeon has no facilities to avoid these methods

Sunderland

PROFESSORS IN INDIAN MEDICAL COLLEGES —The educational conference recently held at Bombay decided to urge the Indian Government to select professors for the Government medical colleges from the entire medical profession in England and India outside and inside the services A resolution was passed advocating the necessity of an adequate system of research scholarship to be started and maintained by the Government for the advancement of scientific knowledge

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THE EFFECT OF X RAYS UPON DISEASES OF BACTERIAL ORIGIN[1]

BY CHRISTOPHER KEMPSTER, M R C S,
L R C P LOND,

PHYSICIAN IN CHARGE OF X RAY AND ELECTRO-THERAPEUTIC DEPARTMENTS OF ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN AND CITY OF LONDON MILITARY HOSPITAL ASSISTANT X RAY AND ELECTRO THERAPEUTIC DEPARTMENT CANCER HOSPITAL, LONDON

DURING recent years there has been an increasing application of the X rays as a means of treatment of diseases of bacterial origin both superficial and deep-seated, with results which have in many cases been surprisingly successful, cases which had under other methods of treatment either become worse or had not improved at all making a rapid recovery This has naturally led to an inquiry as to the reason of the improvement, and consequently as to whether the X rays possessed any specific germicidal action

Close observation and examination has led to some complexity of opinion upon this point, some observers being of the opinion that the X rays do not possess any such power, whereas others are equally of opinion that the germicidal action of the rays is undoubted It would be difficult to find opinions more diverse than these, but, nevertheless, the adherents to each of these conclusions have some good reason for their assumption Those who declare that the X rays are non germicidal bring evidence to show that germs which were present before irradiation are still there after that operation, and those who are of opinion that the rays possess a decided germicidal property give equally substantial evidence in support of their contention by producing cases which have become sterile of the infecting micro-organisms after treatment

Upon the principle that there is no result without a cause, there must be some good reason why evidence so contradictory can be produced for it is certain that investigation upon thoroughly scientific lines has led to the conflict of opinion, and it appears probable that the investigations have been made in different directions The one set of investigators have based their claims upon findings made as the result of experiments and observations of the action of X rays upon bacteria in *inert* or dead *media*, whereas the other set have based their claims upon the result of the action of the rays upon micro-organisms in *living animal tissues*—a distinction of the utmost importance and one which will reconcile these opposite opinions and prove them both to be true

It will therefore be interesting to inquire into the effect of X rays upon bacteria first in *inert media* and then in *living animal* tissues We shall then see that the action of X rays upon bacteria in inert media is not germicidal, and we shall also see that the absence of bacteria in living animal tissues after irradiation is not due to the lethal action of the X rays but to the stimulation of the living animal tissues leading to increased phagocytosis and so to the disappearance of the micro-organisms, but that the phagocytosis is materially aided by the action of the X rays upon the bacteria

Results of Experiments

To this end we will now inquire into a few experiments

If fresh plate cultures of tubercle bacilli be exposed to the X rays in such manner that one-half of the culture plate be protected from the action of the rays by means of a lead sheet, it will be found that upon the portion of the medium covered by the lead growth of the bacilli will have taken place, whereas upon the exposed half no such growth will be evident although the bacilli placed there will still be present Again if developed colonies of bacilli be exposed to the X rays they will not be destroyed by the exposures, but no further development will take place[2]

It is evident from these experiments that the micro-organisms are not destroyed by the rays, but that their growth is stopped, and it has been found impossible by any ordinary long exposure to high vacuum tubes to kill growths of bacilli by X rays[3]

Bergonié and Mangour demonstrated that they were unable to destroy the virulence of tubercle bacilli by exposing sputum containing them to the X rays, for after an exposure of six hours to the rays at a distance of 20 mm from the tube the tuberculous sputum when injected into guinea-pigs caused acute miliary tuberculosis in all the animals injected [4]

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[1] A paper read before the London Dermatological Society

[2] Münch med Wochenschr., 1898, xlv 773 1902 xlix 402

[3] Compt rend Soc Biol 1897 (Série 10) iv, 609 Archives Röntgen Soc 1900 v 3

This subject has claimed the attention of many bacteriologists, and from the results of their work there is undeniable proof that the X rays themselves have no germicidal properties and that the germicidal influence of the X rays themselves upon the bacteria is practically nil. We have thus seen that the germicidal action of the X rays upon bacteria in inert cultures is practically negative, the effect of the rays upon micro organisms in living animal tissues, however, is quite different

Pusey and Caldwell [5] say that when a suppurating ulcer is exposed to the X rays unmistakeable evidence of interference with the growth of the pus organisms is shown The discharge changes from pus to a sero-purulent and then to a sero-fibrinous fluid, and soon the ulcer becomes clean and free of contamination with pus organisms This drying up and cleaning of infected ulcers has been noted by many observers, and it occurs regardless of the character of the ulcer, dirty septic ulcers of carcinoma, syphilis, and lupus become clean and sterile under the influence of X rays alone *without the use of antiseptics in localities where cleanliness* cannot be maintained, it is, therefore, clear from this cleaning process that the micro-organisms responsible for the septic conditions have been destroyed as a result of the exhibition of the rays to the living animal tissues

In order to demonstrate the effect of tubercle bacilli in living animal tissues, experiments were made upon eight guinea pigs, which were inoculated in the inguinal region with tubercle bacilli Three of them were then exposed to the X rays, and all three remained well, whereas the five guinea pigs which were not exposed to the rays all developed tuberculous diseases at the point of inoculation [6]

Pusey and Caldwell have emphasised the fact that organisms can be destroyed by exposures to X rays when situated in living animal tissues, whereas the same organisms in inert cultures are not destroyed by the X ray exposures, proving that it is not the influence of the X rays themselves that causes their destruction, but that the living tissues, doubtless under conditions of activity excited by the X rays, play an important part in this germicidal process, and that it may well *be imagined that this process is in the nature of* stimulation of the cells, which are rendered thereby better able to take care of themselves against the invasion of the organisms, and that this effect on bacteria is caused by increased phagocytosis

Conclusions

It might well be said that if the increased phagocytosis is due to increased stimulation of the tissues, what proof is there that the X rays play any part different from that of any other stimulant applied to the region? The answer is that if tuberculous glands, such as are commonly met with in the cervical region, be subjected to the influence of the X *rays, they will in course of time atrophy* and become sterile of tubercle bacilli whereas glands of a similar nature exposed to stimulation of other kinds, such as fomentations poultices, iodine, &c, do not atrophy and become sterile, but rather increase in size and bacillary virulence

We thus see that the phagocytosis encouraged by the applied *stimulation, is not alone sufficient to prevent* infection, it follows, therefore, that the X rays must play an important and specific part in the prevention of the infection by and in the destruction of the bacilli

We found that when the tubercle bacilli were exposed to the rays they did not form colonies, and we also found that developed colonies exposed to the *rays did not grow, that* the bacilli were not destroyed in either instance but that their increase and multiplication had been inhibited

This, then, is the reason why inoculated guinea pigs when subjected to the influence of the X rays do not develop tuberculous lesions The phagocytes are equal to the task of destroying the germs inoculated into the *animal if the germs* are deprived of their power of rapid reproduction but if their reproductivity is not inhibited the phagocytes are unequal to the task of dealing with the ever increasing invading forces

We may therefore conclude that the effect of X rays upon diseases of bacterial origin is that they have not any germicidal powers but that *they have a decided inhibitory* effect upon the reproduction and increase of the germs, and that they produce stimulation of the living tissues leading to an increased phagocytosis, which is capable of destroying an unreproductive colony of micro-organisms

Harley-street, W

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

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A NOTE ON THE REFLEXES IN TETANUS

BY A G GIBSON, M D OXON, F R C P.,

MAJOR, R A M.C, T INSPECTOR FOR TETANUS

THE deep and superficial reflexes are an index of the degree of spasticity in the particular group of muscles concerned in the reflex Elicited with certain precautions the briskness of these reflexes affords considerable assistance in the diagnosis of nervous disease. In tetanus they can be similarly used to ascertain the progress of the disease The muscular reflexes in tetanus tend to be increased in the part affected, and in the more highly spastic muscles clonus can be obtained provided the antagonisers are not in spasm. We know that the chief method of the spread of the toxin is upwards to the spinal cord by means of the lymphatics of the nerve sheaths near the wound, and it is possible by means of daily estimation of the reflexes to demonstrate how the *different groups of muscles become affected* One group of muscles near the area affected may show an increase or diminution of spasticity according as the disease is increasing or decreasing in intensity Thus in one case under treatment with a wound of the right arm the knee-jerks on a certain day were both markedly increased, but much more *so on the side of the wound Three days* later the jerks were still brisk, the right as before, being brisker than the left, and patellar clonus previously absent was elicitable in both legs Six days after both jerks were equal and normal, and there was no clonus In another case with tetanus beginning in the muscles of deglutition the triceps and *biceps jerks on the right side were increased over* the left Many other instances of this might be quoted.

Another reflex of importance is the jaw jerk of the masseter muscle, this is elicitable in all cases where the jaws are moderately stiff, but not in those with tensely closed jaws It can be elicited, as far as my experience goes, at some stage of all cases of tetanus, even *in local* tetanus of a mild grade affecting a lower limb

The clinical points about these reflexes which need to be borne in mind are these The jaw reflex is not usually obtained in normal persons. *The arm jerks* are usually absent but may be present in neurotic patients The reflexes are equal on the two *sides Clonus—i e*, true clonus—when the contractions increase in intensity, is an abnormal phenomenon

The value of a careful examination of the reflexes lies first as a means of confirming the diagnosis especially in a case of local tetanus Such cases are not always easy of diagnosis when one has to take into account the possibility of reflex immobility due to deep suppuration or from implication of a joint especially the hip-joint, and under conditions now prevailing the tetanus inspector is rightly called upon to advise on the least suspicion of the disease, but if with a local spasm of a muscle or a group of muscles another group not in the same region shows increase of tone a diffusible toxin may reasonably be inferred to be acting in the body Its second value lies in the fact that the treatment by antitoxin can be controlled by the effect on the neuro-muscular apparatus Whether or not to give antitoxin by the intrathecal route on the third, fourth, or later day of the disease involving as it does a general anæsthetic, is not *always easy* to decide It may be determined by the general condition of the patient who, if comfortable and without any tendency to spasm might be left till the next day My experience is that there is no relation between the condition of the patient as regards his comfort and the state of his reflexes Daily vigorous antitoxin treatment alone will cause the muscles to relax, and even under daily intrathecal injections of several thousand units the reflexes may increase, and the jaw reflex which previously had been absent may appear My rule of treatment, therefore, is to push the antitoxin treatment by the intrathecal route until the reflexes begin to show normal reactions

Oxford.

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[4] Bull Acad Med. 1897 (Série 3) xxxviii 66

[5] Pusey and Caldwell Röntgen Rays in Therapeutics and Diagnosis 1904, 290

[6] Semaine Médicale 1896, xvi 266

AN UNUSUAL FORM OF HYPOSPADIAS

By T J THOMAS, L.M S S.A ,

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THE following curious case seems worthy of record —

A. B , aged 19, came to the sick bay complaining that he had a urethral discharge and pain on micturition On examination he was found to be suffering from acute gonorrhœa He was also found to have rather an unusual form of hypospadias glandis The urethral orifice occupied the position normally occupied by the frænum, looking downwards instead of forwards, but the prepuce was much smaller than is usually found in this condition There was a very small meatal ingrowth ending in a cul-de sac representing the fossa navicularis at the site of the normal urethral opening In addition to the above opening there were two smaller pinhole openings situated symmetrically about one-eighth of an inch to either side of it On probing these two smaller openings they were also found to end in culs-de sac having no communication with anything and being about one-tenth of an inch deep

The gonorrhœa in this case was found to be very difficult to treat, the discharge repeatedly recurring after the patient had been sent to duty, apparently cured On closer examination it was found that a certain amount of the urethral discharge lodged itself in these two small culs-de-sac, setting up a mild local gonorrhœa, which again reinfected the urethra The patient was put to bed and the usual treatment of gonorrhœa adhered to—irrigation, copaiba, &c The urethra was first irrigated with potassium permanganate solution 1 grain to the pint A piece of cyanide gauze was then placed around the urethral orifice and a hypodermic syringe with a smooth blunt needle was employed to irrigate these abnormal openings with potassium permanganate This was done thoroughly, and the openings were then filled with nargol jelly 10 per cent , the meatal ingrowth being similarly treated. This was done morning and evening The patient improved under this treatment, and after four days in bed and *seven days'* quarantine he was discharged to duty with no recurrence as yet

Reviews and Notices of Books.

1 *The Pneumothorax Treatment of Pulmonary Tuberculosis* By OLIVE RIVIERE M D Lond., F R C P Lond. London Henry Frowde and Hodder and Stoughton (Oxford Medical Publications) 1917 Pp 186 Price 6s

2. *Pulmonary Tuberculosis Its Diagnosis, Prevention, and Treatment* By W M CROFTON M.D N U I With coloured frontispiece and 10 illustrations London J and A Churchill. 1917 Pp 122. Price 6s net

3 *Rules for Recovery from Pulmonary Tuberculosis A Layman s Handbook of Treatment* By LAWRASON BROWN M D Second edition thoroughly revised Philadelphia and New York Lea and Febiger 1916 Pp 184 $1.25 net

1. In this country a concise survey of the pneumothorax treatment of pulmonary tuberculosis has hitherto been lacking, and the busy practitioner has had no handy guide to this treatment its possibilities and limitations its rationale and technique The history of collapse therapy is instructive As Dr Riviere points out it was James Carson, of Liverpool who in a series of physiological essays published in 1821 was the first to urge the trial of pneumothorax in the treatment of disease Another Englishman, Cayley, went a step farther and in 1885 treated a severe case of hæmoptysis by admitting air to the pleural cavity through an incision in the chest wall But from this stage onwards the evolution of the treatment falls to the credit of continental and American workers and it was not till 1910 that it was taken up in England and then only by a small private sanatorium and the inoculation department of a general hospital By this time the treatment had been adopted as a matter of routine in suitable cases by many sanatoriums abroad Though it can hardly be counted unto the chest specialists of this country for righteousness that they have with very few exceptions lagged in the study of the mechanical treatment of the lungs it must be admitted that the inclination to back no runner till the winning post is passed is defensible up to a certain point on the plea that, in the treatment of tuberculosis, there has been such a mob of starters with so deplorably few winners It may be asked Is this treatment a "winner"? The answer is to be sought in Dr Riviere s book Apart from an occasional lapse into the seductive vice of enthusiasm, the author is admirably critical and judicial. The first chapters are devoted to rationale, indications, and contra indications Later chapters deal with apparatus and technique The author is to be congratulated on his preference for plain instruments, the highly complicated apparatus advocated by some operators requires a special training to use it

The section dealing with the accidents that may occur, and how to avoid them, is calculated to place these bogeys in their true perspective , but the author would have done well to have emphasised more clearly the comparative comfort to the patient with which the treatment can be carried out from start to finish To many the very name of the treatment suggests all the horrors of a spontaneous pneumothorax. The term *artificial* pneumothorax is after all about as appropriate as, say, *artificial* venesection Many, if not most, readers will, no doubt, turn first to the concluding chapter in which the author discusses the results of the treatment Here it receives the dubious praise of statistical endorsement More convincing is the quotation from Burnand ' All the physicians who have applied artificial pneumothorax on an adequate scale agree in assigning to it an eminent therapeutic value We have failed to find such unanimity up to now in the appreciation of any other antituberculous remedy, ' which agrees with the author s own verdict in the opening lines of his preface Dr Riviere commends himself to his readers by a literary style as attractive as it is lucid, and the publishers have provided his book with an agreeable setting

2. It is impossible to disagree with Dr Crofton in calling his book on pulmonary tuberculosis a sketch It is indeed sketchy However, it possesses the charm of unconventionality and in matter both of omission and commission the orthodox will find much to challenge On the subject of treatment, for example the author finds graduated labour and sanatorium treatment scarcely worthy of notice, while several pages are devoted to iodine therapy His faith in iodine as an intravital germicide is thus confessed (p 71) "The claims of iodine for this purpose have always appealed to me very strongly For is not an organic preparation of it manufactured in the thyroid?" The author has interesting views on "opotherapy ' Of menstruation he writes (p 104) ' If it is normal (*sic*) or too abundant, testicular substance should be given A combination of adrenalin, pituitrin, thyroid extract, testicular substance and ovarian substance can be obtained commercially, and is one of the most powerful general tonics I know ' Both patients and sanatoria must feel *tempted to* tilt at the author over the following (p 89) "Public (*sic*) patients of Classes I and II may with safety be sent to sanatoria, the other cases are very much better treated in suitable hospitals where they can have the benefit of careful nursing ' The author is convinced that (p 84) "tuberculosis is a mixed infection ' and writing of the microbes *com*plicating pulmonary tuberculosis he says (p 5) "As we shall see later, it is much safer for treatment *purposes to* treat all microbes that grow at 37° C as infecting the patient and not to consider a microbe which has not been described as not being pathogenic ' Whether the microbe has been treated handsomely or *not* the reader, at any rate feels *not* inclined *not* to feel puzzled *not* to say baffled

3 The world is full of dreary little books and pamphlets, veritable Job s comforters up to date, purporting to teach the consumptive his duty to himself and his neighbour But this sorry stuff does not bear comparison with Dr Lawrason Brown's book It is as fresh as the simple life he would have his patients lead Under cover of breezy aphorisms and homely comparisons, the author conveys a wealth of sound advice In fact though the book is written for the perusal of the patient, it contains many a hint which even the author s fellow sanatorium physicians will find new and valuable Endorsing the dictum "Overeating is just as dangerous *as* undereating ' the author dissociates himself emphatically from the Nordrach regime of the dyspeptic ' nineties ' Himself no champion of smoking by the consumptive, he yet holds that tobacco injures fewer men than excess

in eating His words "The path to cure is steep, and is paved with the stones of small details" form an excellent epitome of sanatorium treatment The merits of the book are so obvious that we can even forgive the author for such an amazing statement as this (p 55) "Nearly every tuberculous patient has a more or less deranged nervous system" His parting aphorism "Remember that the porch is the most essential feature of the house" will, it is to be feared, be enjoyed as a paradox, rather than accepted as a truth by many readers, whose observance of it might prolong their lives Dr Lawrason Brown wishes his pages to be used by patients as a hand book of the fundamental principles of the cure, and we think that our readers might well recommend it from this point of view to their charges

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Hygiene and Public Health By Sir Arthur Whitelegge, K.C B, M D Lond, and Sir George Newman, M D Edin, F R S E Thirteenth edition, revised and enlarged London Cassell and Co 1917 Pp 796 Price 10s 6d net

The new edition of Whitelegge and Newman is a record of six years' progress in preventive medicine and its administration The book still bears the conventional title of hygiene, although it is as much a concise text-book of medicine on its preventive side as Osler, or Taylor, or Wheeler on the remedial side It is in fact, a curious chapter in evolution, that the remedial book should start off with the phenomena of fever or of immunity, followed generally by a topographical grouping of diseases, while the preventive book opens with the primeval elements of air, fire, water, and earth, followed by groups of parasites, large and small, and the spheres of various local authorities It would be stimulating to the reader to consider an arrangement of the two subjects on parallel lines The time is rapidly passing when public health can be considered a branch of medicine to be taken as an extra, or even as a post-graduate, course Prevention must be studied as a matter of course alongside treatment in connexion with each disease and morbid state, and the war, if it has done nothing else, has made this abundantly clear

The present is therefore a peculiarly appropriate time for the appearance of a text-book of preventive medicine, and given the outline as fixed by tradition we have little except praise for the filling in of the details The pages are small, and 800 of them are few in which to include all that is essential in the new without ommitting anything that was good of the old But space has been found for the inclusion of all important legislative and administrative changes The work of the Royal Commission on Venereal Diseases, of the Committee of the Royal Society dealing with food questions, the Mental Deficiency Act of 1913, the National Insurance Act itself, all receive proper notice Such topics as model villages and the health of home workers are discussed The sanitary improvisations of the Army and Navy Medical Services command a chapter which we would gladly have seen longer, and in the application to hygiene of the bully beef tin, in the absence of expensive and complicated engines, we see the future solution of many of the problems of rural hygiene In a few places condensation has led to ambiguity, as in the estimate (p 484) of the action of salvarsan, which might well give the reader too optimistic a view of its rapidity and certainty of result The lessons to be drawn from last summer's experience in America of poliomyelitis in epidemic form in an *urban* area might well have found a place It might be inferred from p 492 that the *prophylactic* dose of tetanus serum is given intrathecally A few actual slips occur, as when TO is confused with old tuberculin—a good reason surely for discarding these misleading initials altogether And are the authors really satisfied that the tubercle bacillus does form spores (p 469)? More serious, perhaps, is the conventional choice of illustrations which group themselves round the rain gauge, the water closet, and the visible parasites The only picture of the spirochæte of syphilis shows nothing Now that the German hand atlas is no more with us, could not a really representative collection of pictorial preventive medicine be issued as a supplement?

A word of commendation should be added for the enterprise of authors and publisher in bringing out a revised edition when both time and material are scarce

Pathology, General and Special, for Students of Medicine By R Tanner Hewlett, M D Lond, F R C P Lond, Professor of Bacteriology in the University of London. Fourth edition London J and A. Churchill 1917 Pp 631 Price 12s 6d net.

In reviewing previous editions of this book we have already commented on the success with which Professor Hewlett has selected and arranged the vast amount of material before him to make a student's text-book. The subject of general pathology is perhaps less bounded by rigid limitations than any other with which the medical student has to deal, and it is well for him when it is largely vital pathology which an author takes as his standpoint and not simply that of the post mortem room and the pathological museum It is five years since the appearance of the last edition of this text-book, years which have added much to our knowledge of such general conditions as shock and collapse, as well as the special conditions due to trench warfare, of which the more important are frost-bite, nephritis, and jaundice, and these have been duly considered in the text The illustrations are well chosen and representative, although we should gladly see all the microscopical preparations done in colour, black and white, however good, gives but an artificial view of a stained section. This is a point, however, which it would ill become us to labour, knowing, as we do from experience, the practical difficulties which attend illustration in colour at the present time. The book is one which may be recommended not only to the student but to the practitioner who wishes to keep correct his perspective of a constantly changing subject

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The Fundus Oculi of Birds, especially as Viewed by the Ophthalmoscope A Study in Comparative Anatomy and Physiology By Casey Albert Wood Illustrated by 145 drawings in the text and by 61 coloured reproductions of the paintings of Arthur W Head, F Z S Chicago The Lakeside Press. 1917 Pp. 181 Price £3 3s net

The makers of this very beautiful volume—Dr C A Wood, Professor of Ophthalmology in the University of Illinois, and Mr A W Head a Fellow of the Zoological Society of London—are heartily to be congratulated upon the presentation of the results of their investigations For the last ten years they have been engaged upon the quite difficult problem of examining and recording the appearance of the fundus oculi in living, or recently dead, birds Anyone who has tried to use a direct vision ophthalmoscope for the examination of the eye of any lower animal will appreciate the initial difficulties of their task, but with birds there are very special circumstances such as the peculiar action of mydriatics, the presence of a nictitating membrane, and in many cases the minuteness of the eye itself, which increase these difficulties enormously We have personal knowledge of the experiences of a highly accomplished ophthalmologist in the examination of the fundus of a tawny owl, and his account of this adventure increases our admiration for the patient and finished work of the authors

The account of the process of examination is particularly well described by Dr Wood, and his many pieces of practical advice will be of the greatest assistance to those who, stimulated by his example, continue these studies The results, so far as they are capable of being condensed, may be said to embrace an extremely wide field of suggestive conclusions First in scientific appreciation will be the purely physiological findings—the many beautiful co-relations of structure and function determined by this study Again, there are the observations upon the well marked changes which domestication and cage life produce, as well as the deductions as to possible changes of habit in wild birds That many of the findings are useful to the systematist there can be no doubt, and that the similarity of the fundus of the gecko and the apteryx is of great interest cannot be denied, but the *living* side of the work is its greatest merit in our eyes As for the plates, they possess the perfection that one would look for when it is realised that the very best methods of modern colour reproduction have been applied to the work of Mr Arthur Head, whose experience of ophthalmoscopic drawing extends over a period of some 20 years The volume is an extremely beautiful one, and it embodies work which is peculiarly difficult, yet particularly well done

Common Diseases of the Male Urethra By FRANK KIDD, M.B, B C Cantab, F R C S Eng London Longmans, Green, and Co 1917 Pp 132. Price 5s net

THE book is comprised of a series of lectures delivered by the author at the time when venereal clinics were being started under the scheme of the Local Government Board. It is of the type much needed by those unfamiliar with the present-day methods of diagnosis and treatment, which for the most part can only be found in text-books of foreign origin

The lectures primarily deal with the diagnosis and treatment of gonorrhœa in its various stages, so arranged as to emphasise the most important practical methods without any attempt to theorise The methods adopted by the author, after the trial of many others, are, however only mentioned. The important feature in the book, which is everywhere emphasised, is the desirability of defining the exact pathological condition present in each individual case before adopting the requisite treatment, the procedure necessary for obtaining this information is carefully outlined Secondly, the type of treatment necessary for pathological change found and based on such findings is described in detail These two points should strongly appeal to the practitioner who desires to depart from any empirical methods that he has previously adopted The value of urethroscopy, both in diagnosis and treatment, is also duly placed in its proper position Many useful tips for treatment are recorded The book is profusely illustrated. A separate lecture, delivered by Dr P N Panton, dealing with the clinical pathology of the diseases of the urethra is included

At the end of the lectures are four appendices 1 Records of 70 clinical cases each illustrating points of interest 2 The author has embodied his evidence before the Royal Commission on Venereal Diseases It deals with certain statistical information, latency of disease in relation to infection, various complications of the disease, sterility, stricture, the question of marriage and urethritis, and the question of prevention and treatment of the disease as they should in the opinion of the author, be practised There are many points of importance in the report worthy of the consideration of practitioners 3 A description of the author's own room in his private clinic 4 Miscellaneous notes dealing with the complications of the disease

The book should be found useful to all those unfamiliar with present-day methods of dealing with urethritis It can be thoroughly recommended to those whose business it is to work in the newly formed venereal clinics, even if it does nothing more than to stimulate practitioners to define the pathological changes present in their cases

Les Blessures de l'Abdomen By J ABADIE, Surgeon in Chief to the Hôpital d Oran Illustrated Paris Masson et Cie Pp 240 Price 4 francs

IN one small volume Dr Abadie has given a comprehensive account of the surgery of the abdomen in relation to gun shot wounds as practised in France at the present time Professor Faure in his preface comments on the curious fact that whereas in other regions of the body the practice of war surgery has become fairly well standardised, the utmost variety of opinion is still held and forcibly expressed, on the subject of abdominal wounds Dr Abadie's book will help to clear up the discrepancy He deals in succession with the principles the organisation and the technique of abdominal wound surgery summarising clearly and fairly the views of others as well as his own rich experience It is hardly surprising to find that he concludes in regard to penetrating wounds En guerre comme en paix les résultats opératoires confirment qu'il y a bien un traitement de choix des plaies pénétrantes de l abdomen *ce traitement c'est la laparotomie'* The volume is singularly well illustrated in all its sections and cannot fail to interest the British surgeon who will find a useful stimulus in comparing his own methods with those of the author

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INSTRUCTION IN HOSPITAL ADMINISTRATION —A three months course of lectures and demonstrations in hospital administration with a view to the requirements of the Diploma in Public Health will be given at the South Eastern Hospital of the Metropolitan Asylums Board (Avonley road New Cross S E 14) by the medical superintendent Dr F M Turner on Tuesdays and Fridays at 5 P M beginning Tuesday Oct 2nd The fee for the course is £3 3 payable to the Metropolitan Asylums Board at the offices of the Board Embankment E C 4

LIBRARY TABLE

SOME WAR BOOKS

FROM a group of books treating primarily of the medical aspects of the war, we select four for notice, which have this in common, that they are graphic descriptions of personal experiences Captain Dolbey's book (*A Regimental Surgeon in War and Prison* By Captain ROBERT V DOLBEY, M B M S Lond, F R C S Eng, R.A.M C London John Murray 1917 Pp 248 5s net) concerns the very early days of the war, narrating the adventures of an officer of the Royal Army Medical Corps with the British Expeditionary Force between August and October, 1914 Captain Dolbey records his work as regimental medical officer in part of the retreat, the advance at the Marne, and in the battles of the Aisne and in the neighbourhood of La Bassée His adventures came to an abrupt conclusion when one October morning he was taken prisoner, and with the wounded under his care, orderlies and stretcher bearers, was imprisoned in Germany The latter chapters of the book tell the tale of Germany as seen by a captive, describe the prisoners' camps at Crefeld, Minden Sennelager, and Gütersloh, and depict what the author calls the nightmare that was the winter of 1914–15 " It is these last chapters which make the historical value of a book which is clearly arranged and well written

Professor Boyd's book (*With a Field Ambulance at Ypres* By WILLIAM BOYD Professor of Pathology, University of Manitoba. Toronto The Musson Book Company, Limited 1916 Pp 111 $1) is a personal diary, kept, as he says, "in the kitchens of French farmhouses, in muddy dug-outs and other unromantic places" The notes date from March, 1915 to August, 1915, and therefore may be read consecutively to Captain Dolbey's book. The views and reflections are communicated with great sincerity and in a quiet intimate style Among them will be found a record of the first gas attack in the war, a note dated April 28th, 1915, running as follows —

> "This morning I had to go to one of the casualty clearing stations, and there I saw a sight which for sheer ghastliness equals anything to be seen in any dressing station The hospital is built around a great courtyard, and in that courtyard were two hundred men on stretchers Some were lying in a state of stupor, the flies buzzing about their faces, some were sitting up gasping for breath, with hands and faces of a deep, dusky hue evidently in the greatest distress, over the countenance of others the pallid hues of death were beginning to creep, whilst a few had fallen back and with gurglings in the throat were passing away into the undiscovered country They were the first gas cases from Ypres and Hill 60 "

A pathetic photograph is appended to the note showing a group of Canadian soldiers who were among the first to suffer from gas poisoning

Miss Agnes M Dixon (*The Canteeners* By AGNES M DIXON London John Murray 1917 Pp 176 3s 6d net) gives a vivid account of life in a French Red Cross canteen not far from the front, where it was her duty to minister now to soldiers moving forward and now to wounded coming back The book is dedicated "To the French *poilu* as I have known him, to his courage, patience, modesty, and chivalry, to his doggedness and grim determination to rid his beloved *patrie* of the foul and cruel invader", and is illustrated with a good many well produced photographs This modest record of hard work done makes pleasant reading because it is infused with the spirit of cheerfulness which has been a marked feature of all Red Cross work The author's profits from the sale will be handed over to the London Committee of the French Red Cross, under whose ægis the "Cantines des Dames Anglaises are established in France

Major Charles Barber (*Besieged in Kut and After* By Major CHARLES H BARBER I M S Edinburgh and London William Blackwood and Sons 1917 Pp 344 5s net) tells the story of the siege of Kut in graphic language His narrative takes us from before the battle of Ctesiphon up to April 29th, 1916, when the place was surrendered all attempts at relief and at victualling having failed It is a sad summary of calculations upset and previsions unrealised from which the courage of those actually engaged in the struggle emerges vividly

The following books (*After War Problems* By the Earl of CROMER, Viscount HALDANE the Bishop of EXETER, Professor ALFRED MARSHALL and Others Edited by WILLIAM HARBUTT DAWSON London George Allen and Unwin, Limited 1917 Pp 366 7*s* 6*d* net —*Proposals for the Prevention of Future Wars* By Viscount BRYCE and Others London George Allen and Unwin, Limited 1*s* net Pp 53 —*The Choice Before Us* By G LOWES DICKINSON London George Allen and Unwin. Pp 274 6*s* —*The Perils of Peace* By CECIL CHESTERTON With an Introduction by HILAIRE BELLOC London T Werner Laurie Pp 239 2*s* net) deal with the purposes, necessities, and perils of militarism and also show the dangers underlying the policy of peace at any price, and they do these things from many different points of view As the title-page shows, the book written by Lord Cromer and his fellow workers is the product of some of our foremost intelligences focussed on the solution of the large problems which the cessation of hostilities will reveal The editor foresees that the new England whatever it becomes, will be the result of long and painful effort, of sacrifice and renunciation Gambetta's watchword is his also "*Le travail, encore le travail, et toujours le travail*" Education, the relation of capital and labour, the land question, the economic future of women, are some of the general subjects debated with freshness and suggestiveness by the writers In the section of Social Reform two more directly medical topics, National Health and the Care of Child Life, are handled by Dr James Kerr and Miss Margaret MacMillan respectively Dr Kerr sees great possibilities of improved national health if the conditions are squarely faced and dealt with on an honest and just basis He deprecates the tinkering with superficial symptoms, and finds that the chief national concern should be healthy maternity and good nursing All services and commodities, he concludes, necessary for public health should be completely controlled by the community in its own interests and for the benefit of all its members Miss MacMillan's plea for the open air nursery school will be read with interest in connexion with Mr Fisher's recent proposals All who wish to help in the solution of the after-war problems should study this book

Lord Bryce and his collaborators suggest a treaty to be established between the great Powers of Europe, the United States, and Japan, agreeing to refer to the existing permanent Court of Arbitration at The Hague, or to the Court of Arbitral Justice proposed at the second Hague Conference—if such a Court is established—or to some other arbitral tribunal, all disputes of a justiciable character, and which the Powers concerned have failed to settle by diplomatic methods Matters of national honour, it is suggested, would also be submitted to arbitrament The prefatory note is dated February, 1915, although publication did not take place till more than two years later The project is a well thought-out one, and quotations from leading statesmen on the subject of international relationships after the war show that the views of the projectors are shared by leading and responsible persons It has become abundantly clear, how ever, to everybody who thinks that proposals for the reform of international relations can have no substantial basis until Germany has been punished for the repudiation of her undertakings—to put her offences against the world at their lowest estimate

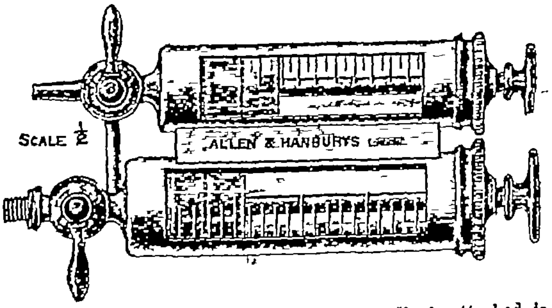
Mr Lowes Dickinson in a plea for internationalism as against militarism would probably not agree that punishment of Germany was necessary, and this it seems to us, is a weak spot in the policy which he advocates, for we have never been able to convince ourselves that punishment is not a deterrent of crime He thinks that all the world may be unfavourably affected by militarism, but he admits that Germany is the leading case Readers are certain to differ according to their estimates of moral values from some of the conclusions of the author, while they are equally certain to agree with others, the paradoxical position of those who attribute the necessity of war to any one cause, such as economic competition or growth of population, is neatly exposed

It is stated on the cover of Mr Cecil Chesterton's book that it shows conclusively "that any peace which leaves the present German Empire in existence with its centre in Berlin would be a mere truce" The book fails to do anything of the sort, but there is sense in some of what the author says

New Inventions.

A DOUBLE-BARRELLED SYRINGE

THE double barrelled syringe shown in the illustration is made in two sizes—one to hold 2 cubic centimetres and the other to hold 20 cubic centimetres The object of the smaller syringe is to inject a little saline from one barrel after the drug has been injected intramuscularly from the other barrel thus preventing a track being made during the withdrawal of the needle The mercury, or whatever drug is being injected, is thus prevented from getting into the subcutaneous tissue and producing an abscess or an indurated lump A local anæsthetic can be given before the drug is injected intramuscularly without having to make two pricks The larger syringe is for intravenous or for intraspinal work.



If the left-hand barrel, to which the needle is attached is filled with the solution to be injected, after inserting the needle into the vein, as much blood may be withdrawn into the right-hand barrel, emptied into a receptacle, and refilled as often as desired, before or after the drug is injected. When injecting colloids it is a good plan to let the blood mix well with the colloidal suspension before it is injected, a manœuvre which can be well carried out with this double barrelled syringe As the right-hand barrel can always be filled and refilled with a solution from a receptacle underneath, and the contents discharged into the left-hand barrel, a dilute as well as a concentrated intravenous injection may be given Another advantage is, that the right-hand barrel may be filled with a calcium chloride, glucose, and gelatin mixture, which can be injected through the same needle before the contents of the left-hand barrel are discharged, to prevent shock, or after should symptoms of shock threaten.

They are made by Messrs Allen and Hanburys, Limited, 48, Wigmore street, London, W 1

J E R MCDONAGH, F R C S

Wimpole-street, W

A NEW FRACTURE SUSPENSION APPARATUS

WE examined recently a new method of slinging fractured limbs at the McCaul Hospital for Officers, 52, Welbeck street, W The apparatus the "Hammock Suspension for Fractures," was devised by Miss Gasetti, a Frenchwoman Essentially it

The apparatus is simple and inexpensive can be bolted to consists of a frame made of wood, which than those forms any bed, becoming thus more widely useful The frame is of apparatus which need a special bedstead four or five feet, quadrilateral and is held above the bed some are fastened pulleys and to this rectangular horizontal frame the injured limb is sus through which run cords from which to carefully adjusted pended, these cords are attached also the weight of the counterweights which just counterbalance the patient wishes to injured limb and splints, so that when very slight force and move the broken limb the cords give to The apparatus also the limb has the minimum of disturbance so adjusted as not provides for extension, and this can be movements of the limb to interfere with the position and of the limb, a matter The apparatus allows also for abduction at the upper end sometimes of great importance in fractures of a transverse bar of the femur This is effected by means beyond the end of the reaching outwards for a foot or two extension cord works is bed, the pulley over which the is necessary from the fastened to this transverse rod as far as of abduction needed middle line, according to the amount adapted for its purpose The apparatus struck us as admirably

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Rational Treatment of Constipation

By the double action of secretions and peristalsis

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It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen

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Opolaxyl does not lose its efficacy by prolonged use, its effect is gentle and constant, with the least irritation It is not merely purgative, it stimulates the defective organs and revives the normal equilibrium, it has a lasting effect because it rebuilds the organs, thus correcting diminutional function

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For obstinate constipation 2 or 3 tablets, afterwards
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The Most Powerful and Effective Urinary Antiseptic.

URASEPTINE is a granulated product entirely soluble in water, its bases being **Piperazine, Urotropine, Helmitol, Benzoates of Sodium and Lithium** It contains 60 centigrams (10 grs) of active matter to each teaspoonful

Dose.—2 to 6 teaspoonfuls daily

It purifies the Urine, and this action is due to its three principal properties

1 It is a URINARY ANTISEPTIC.
2 A SOLVENT of URIC ACID and of PHOSPHATES.
3 A MILD NON-TOXIC DIURETIC.

INDICATIONS—**Arthritism, Gout, Gravel, Hepatic and Renal Colic, Rheumatism, Calculus, &c, Phosphaturia, Urinary Antisepsis, Pyelitis, Bacteriuria, Cystitis, Prostatitis, Urethritis, Pyuria, Urinary Abscess, Vesical Catarrh, &c**

LITERATURE and CLINICAL REPORTS on REQUEST

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Ambrine forms a dressing which INSTANTLY alleviates pain—promotes rapid healing—forms a sure protection against infection of the wound—can be removed without pain hæmorrhage, or injury to the newly formed tissues The healing leaves no scars or contractions

The most efficient means and method of ensuring active **Hyperthermal Therapy** to the practical treatment of **Rheumatism, Gout, Arthritis, Varicose Ulcers,** and similar affections

May be applied with camel hair brush, but our specially designed spray greatly facilitates the application of Ambrine, especially in the case of deep wounds or extensive surfaces

THE LANCET, June 10th, 1916 —

The Value of Ambrine in the Treatment of Wounds

Attention is being drawn to the remarkable success of the Ambrine Wax treatment now being used at the Hôpital St Nicolas at Issy les Moulineaux for burns frozen feet and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their resolution by the usual means The Minister of War in reply to the Deputy M Mons as to why in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St Nicolas all the soldiers suffering from such wounds were not sent there stated that this was being done as far as possible ...

Medical Treatment of CANCER.

CUPRASE

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The numerous clinical reports from Doctors of repute in various countries give cases of a great variety In all of these pain has been eliminated, and in a good percentage cures are claimed, and in no instance any undesirable effects

Its *easy application* (subcutaneous injections) places it within the reach of all practitioners It *is not toxic*

Disappearance of the Pain

Return of Sleep

Increase of Appetite

Colour and Strength

Warwickshire, July 1st 1917

Dear Sirs—Will you please send me another box of Cuprase ampoules The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer—the cauliflower like growth has disappeared with its offensive discharge

This case was given three months life by a Specialist being inoperable

Yours faithfully
(Signed) B—— B—— M R C S L R C P

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For application as an unctuous dressing for torpid Wounds and Ulcers, and for Stings of all descriptions

Medical Reports are to the effect that "**SANITAS JELLY**" is very useful—

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THIS preparation admits the administration of iron *for long periods* without digestive disturbance or constipation The iron, being in colloid form, is quickly and easily assimilated With Liquid Paraffin no habit is induced as with purgatives such as cascara, aloin, &c Gives excellent results in Anæmia, &c

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Dialysed Iron	**20 minims**
Russian Liquid Paraffin, B P	**55%**

in each tablespoonful

Samples Free to MEDICAL MEN

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THE LANCET.

LONDON: SATURDAY, SEPTEMBER 15, 1917.

Reconstruction.

AT a recent meeting of the medical profession at Edinburgh a unanimous resolution was passed to the effect that the circumstances in which the medical profession is placed "made it impossible effectively to consider any scheme before the end of the war for the establishment of a Ministry of Health," and this is a view which has for its support so many obviously sound arguments that it must be seriously considered. The medical profession has given over a quarter of its total, and the most effective quarter, to the country for the purposes of the war, and though some of these men are returning to civil life others are taking their places and must continue to do so for some undefined period. As officers in the Navy and Army their opportunities for even expressing their opinions are very restricted, and as to backing those opinions by action of any sort there can be no question at all. Numbering among them men whose professional work entitles them to give counsel to their colleagues and to the country on all points in the administration of medical service, they will remain largely out of any discussions, professional or other, of the difficulties that may arise during the formation of a Ministry of Health. Yet on their return they will be confronted with the results. On the other hand, there is no doubt that for the medical profession to adopt a do-nothing attitude would be to risk the creation by lay authorities of a scheme that would not be agreeable to members of the medical profession remaining at home, and which might press hardly on certain of that large proportion of practitioners whose interests, in their absence from their usual duties, it is proposed to defend by resisting active innovations at the moment. Here again we have a point of view based on arguments which cannot lightly be dismissed, for it is quite certain that a Ministry of Health uninspired by the ideals of the class that will constitute not only its official leaders, but its rank and file may fall sadly away from that standard of efficiency which is necessary for the justification of its genesis.

The difficulty in this situation of ascertaining on which side truth lies is a difficulty which is not peculiar to the medical profession. The medical profession has somewhat slowly begun to regard itself, and to be regarded by others, not as a thing apart from the sociology of the general population, but rather as a section of that population more intimately concerned with general welfare than is any other section, and the problem before us is before the nation as a whole with regard to all national activity. The war has lasted longer than was anticipated, and its duration may still disappoint sanguine expectations, for many of the theories regarding failure of resources and exhaustion of money are now seen to be false almost in direct proportion to the confidence with which they were enunciated three years ago. And it must be remembered that after the war is officially over an appreciable time may elapse before any free development of social life takes place. Now during all this period, of undetermined length, civilisation must not be allowed to stand still, and, if possible, it must progress in spite of the disabilities. And while, on the one hand, the days in which we live seem very inopportune for the promotion of social reforms, owing to the fact that those who would necessarily lead the movements, whether individual or collective, are so deeply engaged in fighting the Germans as to have no spare time or energy—on the other hand, these are days when great changes can be advocated and effected without creating any of the opposition which their mere suggestion would have aroused before the world's upheaval. If the policy of waiting has its advantages the same can be said for the policy of action. We must not make too much of the drawbacks attendant on revisions of our social scheme while some people are unable to play what would otherwise have been a leading part in reform, for, despite the support and guidance from sources whence they might be expected, men naturally reactionary will lean towards the cause of reform, if only through the feeling that a civilisation which has let the world in for such a welter of horrors can, perchance, be amended in many particulars.

The formation of a National Party to take the place of political parties has been objected to on the ground that this is not the time for clearing up the mess of our political system, and contrariwise the creation of a National Party has been advocated on the ground that there is much work to be done now if we are to progress in the immediate future. We see therefore that the medical profession, an integral part of the social scheme, is in a position which exemplifies our present national conditions, and what is good for the country will be good for medicine. We think that some reconstruction work should be thought out now, but that is not the same as saying that, in the absence of over 10,000 medical men—with many of our leaders in this category—from the practice of their profession schemes radically altering the condition of that practice should be put in hand. Yet no one can fail to see that medical practice has inevitably been profoundly altered by the war. We should like to learn of the formation of a board, comparable in some ways to the Ministry of Reconstruction over which Dr. ADDISON presides, whose prime function should be to think. The members of the board could be largely spared the task of collecting facts, for the General Medical Council, the great medical corporations and medical faculties of Universities, the Government Departments having medical affairs in their charge, the British Medical Association, the leading medical charities, and the medical press can between them supply all needful information. But the interpretation of the facts thus obtained may well require close attention from persons intimate with the details of medical education, scientific work, and professional life, and this would be ensured by the formation of a strong board, and to this board the representatives of the medical men now serving in the Navy and Army, with their good perspective of home affairs, would contribute materially

The Pathology of War Nephritis

LAST week we referred to the etiology of certain obscure war diseases This week two articles on War Nephritis give occasion for a return to the subject In one of these, which we print on another page, Captain C E SUNDELL and Captain A T NANKIVELL state the results of their study of 250 cases which have come under their personal notice In the main they confirm the clinical observations of previous writers, but they come to a different conclusion as to the etiology of war nephritis They suggest that the disease is caused by some error of metabolism due to a dietetic deficiency If this is so, the rarity of nephritis in the South African War is certainly surprising, since all the dietetic deficiencies referred to by the authors were existent then, and in a higher degree than in the present war Restricted diet has been common in war, but nephritis has been rare The authors note that the disease was very rare among the Indian troops, but Indians are also comparatively immune from scarlet fever Some observers hold that the infective agent in war nephritis is an organism allied to that causing scarlet fever, and if Indians are immune from one they might be immune from the other The comparative rarity of nephritis among officers is curious, though less marked than it was, but, as the authors point out, nephritis does occur among hospital nurses, in whom a condition allied to scurvy—suggested as a cause—is not likely to arise Several of their interesting pathological observations might be held to confirm the observations of others who have come to different conclusions Thus they find that the blood counts were typical of the so called protozoal diseases An animal ultra microscopic virus was suggested as the cause by Captain W LANGDON BROWN (of whose work the authors appear to be unaware) in the *Journal of the Royal Army Medical Corps* for July, 1915 Their observation that the glomeruli were almost entirely destroyed or filled with endothelial plugs, and that the kidney lesion is focal rather than diffuse would tend to support Captain J S DUNN's views of the embolic nature of the nephritis It is unlike anything that has been described in the kidney in scurvy

In the second article, appearing in the April number of the *Canadian Medical Association Journal*, Professor RUDOLF has summarised his experiences of war nephritis Although his clinical observations are in accord with those of Captain SUNDELL and Captain NANKIVELL his conclusions are different, for he states that the disease appears to be due to some infection, local or general, the nature of which has not been determined, but probably of the ultra microscopic variety In general he supports Captain LANGDON BROWN's views He draws attention to the epidemic character of the disease comparing it with the epidemic in the American Civil War Like other observers, he is impressed with the low mortality rate and the frequency of nocturnal dyspnœa, which he regards as distinguishing characters of this as opposed to other forms of nephritis Two forms of protozoal disease, new to Europe at any rate, have been held responsible for widespread epidemics of low mortality in this war —namely, the hæmogregarine of trench fever and the spirochæte of epidemic jaundice It seems probable on the evidence available that a third organism of this kind may be responsible for war nephritis The strongest argument adduced against an infective theory is that of Captain DUNN, who points out that the disease is almost unknown among the civil population in France, although living in very intimate relation with the military On the other hand, we have to account for the cases among nurses and orderlies in base hospitals in France who come into close contact with the patients at an early stage of the disease It is difficult to see how a dietetic factor could account for the entire absence of the disease from the training camps in England The analysis of the literature of war nephritis, published last May by the Medical Research Committee, gives to all who are interested a ready opportunity of studying the subject further

Annotations.

"Ne quid nimis"

THE ROYAL SOCIETY OF MEDICINE

AT the recent annual general meeting of Fellows of the Royal Society of Medicine attention was called to the resignation of the first editor of the *Proceedings* and Mr J Y W MacAlister's offer to assume the duties without any addition to his salary This offer the Council had gladly accepted, and the acknowledgment of Dr Charlton Briscoe, honorary secretary of the society, of the large debt owed to Mr MacAlister for his gratuitous services was warmly received Dr Farquhar Buzzard (acting honorary treasurer) presented the balance sheet for the year ending September, 1916, showing a balance of income over expenditure for the year of about £1000, but the number of Fellows has decreased and their subscriptions still more, making it advisable to increase the number of Fellows as far as possible, while, on the other hand, there has been a general increase in expenditure common to all bodies and persons at present The President of the society, Sir Rickman Godlee recalled the work done by the Emergency Surgical Aid Corps, which is called out by the police and War Office whenever an air raid takes place in London This corps is supported altogether by the voluntary contributions of its own members, who on many occasions have spent tedious hours of waiting in the night, besides rendering considerable service He also commented on the new feature which Mr MacAlister had added to the *Proceedings* under the title of "Notes on Books" These notes which are quite short have been made by various members during the reading of the books They consist of a few lines indicating the contents with accuracy and publishers have been found willing to present books on the understanding that they shall receive this amount of publicity A good number of Fellows have helped in the work, but more would be welcome, and they are invited to tell the secretary the kind of book they wish to receive The President reported that Dr C G Cumston, of Geneva, a Fellow and a member of the Section of the History of Medicine had intimated his intention to bequeath a sum of £17,000 to the society, the income to provide for lectures on the history of medicine and additions to the society's library on that and other subjects A vote of thanks was passed to the President for his address and for his valuable services during the past year, and the best thanks of the society were voted to the retiring Vice Presidents and retiring members of the Council for their services during their terms of office Dr Maurice Craig moved a cordial vote of congratulation and thanks to Mr MacAlister on the completion of 30 years of service to the Society, together with an earnest hope that his health may permit him to continue his work for many years to come This was seconded and heartily endorsed by the President and carried by acclamation Mr MacAlister responded, "I can only say thank you, Sir, and Fellows all. At the end of the next 30 years I shall perhaps have more to say"

HAY FEVER PLANTS IN THE UNITED STATES

IN the Eastern States of America 84 per cent of the cases of autumnal hay fever are attributed to the pollen of the common ragweed, *Ambrosia elatior*, while the grasses, both wild and cultivated, are blamed for the early and less serious form *A elatior*, or ragweed, is not to be confused with the gorgeous yellow ragwort Its pollen is only 15 μ in diameter, and with a spiculated surface increasing its buoyancy by one half, has been shown to travel several miles in a moderate wind Dr William Scheppegrell, who has devoted much attention to the causes of hay fever, writes in No 29 of the U S Public Health Reports on the flowers which have been incriminated in the Western States where the ragweeds are rare All hay fever plants are wind pollinated, which means that they bear inconspicuous flowers without bright colour or scent, and produce large quantities of pollen He has employed the biological test, which consists in applying a weak saline extract (1 20 000) of the pollen to the nasal mucous membrane, gradually raising the strength until a reaction occurs A conjunctival or skin test may also be applied Some pollens are intensely irritating, the Californian mugwort *Artemisia heterophylla*, produces a reaction even in a dilution of 1 100 000 On the whole, it is the genera *Artemisia Iva*, and *Gærtneria* which account for most of the cases and while prevention is rendered more difficult owing to the variety and great prevalence of the plants concerned, it is not insurmountable, inasmuch as the pollen of these plants is much heavier than that of *Ambrosia*, and their range of wind distribution not more than one sixth The education of the public in the noxiousness of these weeds is according to Dr Scheppegrell the important matter when suitable legislation will be enacted New Orleans has already, in its grass weeds ordinance, legislated in regard to the causes of the vernal fever

THE METROPOLITAN WATER-SUPPLY

ACCORDING to the reports to hand, the rainfall at 12 stations which have been selected as giving equal representation for all parts of the Thames basin during the months of April, May, and June was above the average mean for those months as recorded for the previous 34 years In April it was 0 24 inch above, in May 0 30 inch, and in June 0 22 inch The work of filtration proceeds satisfactorily, as all the samples collected at the different works were, generally speaking, clear, bright, and free from suspended matter In some respects the chemical quality of the raw river waters in April and May was worse or showed little change compared with their averages, but in June the results were generally better All the raw river waters contained, however fewer bacteria than their respective averages for the year 1916, while all the filtered waters, generally speaking, yielded not unsatisfactory results, from 71 4 (June) to 97 4 (April) per cent of the samples containing no typical *B coli* in 100 cubic centimetres examined

INDIGENOUS MALARIA IN ENGLAND

AN interesting case of malaria acquired in England, by a soldier, aged 20, who had never been out of the British Isles was reported in THE LANCET of August 4th last by Captain A C D Firth. Other cases of the same nature have been detected during the last few months especially amongst the troops stationed in and near Aldershot The return to England of large numbers of men who have had malaria in the Eastern campaigns involves the presence among certain military populations, and to some extent among the civil population generally, of persons who carry in their blood the parasite of malaria Information as to the prevalence of different kinds of mosquitoes in England is by no means complete, but there is no doubt that in certain areas in the south and east, particularly those where marsh fever or ague was common up to the earlier part of last century, anopheline mosquitoes, particularly *A maculipennis*, are still met with and are occasionally abundant Towards the end of last month weather conditions seem to have favoured the production of swarms of mosquitoes in many places, some of which have undoubtedly included anophelines In these circumstances measures to limit possible malaria infection are clearly required, and we understand that they have been taken very thoroughly by the War Office, which, with the advice of Sir Ronald Ross has made arrangements for the segregation of known cases of malaria in special depôts and hospitals for the continued administration of quinine in the case of all soldiers who are likely to remain carriers of malaria, and for various other precautions to be taken As regards the civil population the Local Government Board has instituted inquiries, through the medical officers of health of districts likely to be affected for the existence of indigenous cases of malaria and has supplied these officers with a memorandum on the subject to be circulated to medical men practising in their areas It is there urged that medical practitioners should keep the medical officer of health informed of any cases of fever occurring in their practice shown or suspected to be due to malaria, in order that inquiries may be made as to possible sources of infection The memorandum further states that the department has made arrangements whereby specimens of blood will be examined and reported on free of charge, if sent, according to instructions, to the medical officer of the Board at Whitehall It seems probable that only a small number of sporadic cases will be heard of, and with the near approach of weather conditions fatal to the adult anopheline such risk as now exists should not long continue But in view of possible future developments it is of great importance that all available facts should be ascertained, and that the possibility of malaria should be kept well in mind when anomalous or unusual febrile attacks are met with, especially near large military centres which are situated close to marshy and low lying areas The liability of children to this disease should also be remembered

ADOLF VON BAEYER

Professor Adolf von Baeyer, whose death in Munich was announced last week, was prominent among the founders of Germany's chemical industry His early studies were devoted to the constitution of complex molecules, and much of our knowledge of the architecture of organic compounds is due to his brilliant investigations His work, though at first of a purely scientific character, soon found industrial application, and a trade in synthetics was set up His greatest achievement, perhaps, was the preparation of synthetic indigo with naphthalene in one case and benzene in another as a starting point The process, after the expenditure of very large sums of money, was acquired by the Badische Anilin und Soda Fabrik at Ludwigshafen, which is quite distinct from the Farbenfabriken of F Bayer and Co at Elberfeld—also a very large concern Adolf von Baeyer was born in Berlin in 1835, and was a pupil of Bunsen and Kekulé In 1860 he became assistant professor in Berlin at the technical college, then from 1872–1875 in Strassburg, and lastly the head of the university laboratory at Munich, the famous Liebig's chair

THE NUTRITIVE VALUE OF BEER

THAT the direct food value of beer counts for little is borne out by an interesting investigation carried out by J S Sharpe in the department of physiology, Glasgow University, the results of which are published in the August number of the *Biochemical Journal* It cannot be denied that the alcohols, sugars, and dextrin have a certain value as sources of energy, but even if we reckon that the total nitrogen found is present as nutritive material still the amount is insignificant But, as Mr Sharpe shows, it is a mistake to assume that all the nitrogen present is in the form of protein As a matter of fact, the protein nitrogen of the beers he analysed varies from only 13 2 to 37 per cent of the total nitrogen—that is to say, the protein content of beer varies from 0 038 to 0 185 per cent, quite insignificant figures In regard to the further distribution of nitrogen in beer, the amino acid nitrogen varies from 0 014 to 0 040 per cent, nitrogen in purins from 0 010 to 0 039 per cent, and amounts due to other substances as alkaloid and bases are quite negligible These results are of interest, especially in view of the report of the Committee of the Royal Society on the Food Supply of the United Kingdom, which stated that the nitrogen compounds of beer have been little studied So incomplete is our knowledge of their nature that this committee did no more than assume that something between 50 and 100 per cent of the nitrogen in beer is in the form of protein or amino acids which are utilisable in the body The higher gravity beers, as might be expected, show a higher nitrogen value than the low gravity beers, but is not all this beside the point? Beer is consumed because it is to so many a pleasant and palatable beverage The thirsty man pays no regard to the food value of beer, he looks upon it as a pleasant, refreshing drink, and he is right, and it is fallacious once and for all to justify its consumption on the cult of calories or "tissue formers" There is, however, one point overlooked in regard to the rôle of beer in the dietary It contains a material amount of diet deficiency substances of the order of vitamines, and investigations have shown that beer added to the dietary increased the assimilation of non nitrogenous foodstuffs, and particularly of fats, while alcohol in moderate amount increased protein absorption from nitrogenous foods Then, again, beer has undoubtedly a condimental action and often makes the simple meal attractive, if it is only bread and cheese Thus regarded, beer, instead of representing a waste of food materials from which it is made, may actually effect an economy in inducing in those whose custom it is to drink it a better appropriation of the food they consume In the recent bitter controversy about the merits and demerits of beer this consideration should not be left out of the equation, in justice to beer drinkers who are modest in their demands for the national beverage

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WE draw our readers' attention to the appeal of the War Emergency Fund of the Royal Medical Benevolent Fund, a second list of contributions to which appears in our advertisement columns The fund is intended to coördinate and supplement the other existing agencies concerned with the material prospects of the medical man who has made sacrifices for his country Those responsible for its administration are determined that it shall help, and help effectively, needs which can be met in no other way

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THE Ministry of Food is itself a novelty and has taken the novel course of issuing an official journal The first number of the *National Food Journal* appears this week, and the breaking of the customary reticence of a Government Department is, in this instance at all events, a matter for congratulation, for the journal should be a persistent weapon in the campaign of food economy

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NEWS has been received from Dublin of the sudden death of Dr Frederic William Kidd, who occupied for many years the Chair of Midwifery at the Royal College of Surgeons in Ireland and was an ex Master of the Coombe Lying in Hospital

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FOREIGN ORDERS AND DECORATIONS —The King has granted unrestricted permission to the undermentioned medical men to wear decorations conferred upon them respectively by the Russian Government, in recognition of the services which they have rendered to the Russian sick and wounded under the auspices of the British Red Cross Society and the Order of St John of Jerusalem in England Dr Frank G Clemow, C M G, has received the Order of St Anne, Class 2, with Swords, Dr Edward M Hime the Order of St Stanislas, Class 2, and Mr Alfred E Hind the Order of St Anne, Class 3

THE BIOLOGICAL ASPECTS OF WARFARE

BY HARRY CAMPBELL, M D LOND, F.R C.P LOND,
PHYSICIAN TO THE WEST END HOSPITAL FOR NERVOUS DISEASES LONDON

I

The Function of the Combative Instinct

FROM the biological standpoint the combative instinct is to be regarded as a normal mental attribute, not as a quality to be condemned offhand as something which the world would be all the better without That it has existed for a useful purpose is shown by its universality among all but the lowest animal organisms and by the fact that special weapons of offence and defence in the shape of horns, tusks, claws, and the like have evolved to give effect to it Some measure of combativeness is obviously necessary for all the vertebrates and many of the invertebrates in the struggle for existence, for a creature without some self assertiveness, some show of fight would be at a distinct disadvantage in that struggle. The primary object of this instinct is to enable an animal to get the better of a rival by direct encounter The emotion attaching to it is anger—the most violent, be it noticed, of all the emotions This emotion, unless controlled, causes the combatant to assume a ferocious aspect—to show the teeth, erect the hairs, and to utter terrifying sounds all with the object of cowing the opponent—while at the same time it has the effect of liberating the flood of muscular energy needful for the ferocity of onslaught which makes for success Although unbridled rage is helpful in fight among the lower animals, needless to say it is the reverse of serviceable in the deliberate fighting of man against man, as in boxing and fencing, for here anger interferes with those cautious methods of attack and defence which are essential to success To lose one's temper in fighting of this kind may be to lose the fight With this reservation it is curious to note the close kinship between the combatant instinct of man and of the lower animals The untamed man when enraged assumes in very truth the aspect of the tiger he puts himself in a threatening attitude, frowns, glares rolls his eyes, grinds his teeth, snarls growls or even roars—thus instinctively seeking to strike terror into his opponent The raising of the voice in anger is manifestly akin to the roar of the angry carnivora Darwin has pointed out the connexion between the human sneer and the snarl of the angry dog, and I have myself seen a refined woman in a transport of spite lift her upper lip and show her teeth in a manner absurdly like an enraged beast But nothing shows more clearly the essential identity of the fighting instinct in man and the lower animals than the way in which a child, soon after it can toddle will rush at the object of its passion and proceed to bite and scratch, i.e to use teeth and claws as any of the carnivora might It would be interesting to know how far the grimacing habit of children is related to the combative instinct A child protrudes its tongue and contorts its features in order, it would seem, to express dislike and defiance

The primary object of anger, rooted as it is in the fighting instinct is to prompt to combat This is its natural goal The emotion may however fail to realise itself in the natural way owing to the operation of restraining influences Such a one is fear—in the case of the lower animals practically the only one In the case of man, other inhibitory influences come into play The normal civilised man even when in a tempest of passion is able by an effort of will to restrain himself from venting his rage by the primitive method of personal assault

Now among the causes of anger pain especially when it can be referred to an external source takes a prominent place This, we may suppose is because among the lower animals pain is frequently caused by the attack of another animal The animal attacked is roused by the pain inflicted to retaliate upon the aggressor and every additional pang sustained in the course of the encounter intensifies the fury which makes for success In order that it may excite to fury the pain must not however be too intense for in that case it may have a paralysing numbing effect robbing the combatant of courage and prompting to hasty retreat This cowing effect of pain is made use of in training unruly animals human and other

The tendency to retaliate upon an object causing pain does no always display itself in a rational way There is a disposition to vent rage, e g, upon the innocent bearer of bad news or even upon inanimate objects thus a man who hurts himself against an object may have an irresistible impulse to kick that object, just as a dog bites at the stick which is lifted against him, similarly, an undisciplined person may in a transport of passion relieve his feelings by smashing all the breakable articles within reach

The effects of anger which realises itself in actual assault being to injure and to inflict pain, the question arises how far the assailant derives satisfaction from the injury and pain which he inflicts Here we find a striking contrast between man and the lower animals—and not to the credit of the former The sub-human animal has no conscious desire to inflict pain upon the object of its rage, it is just impelled by blind instinct to make a destructive onslaught upon it The like is true of the child who scratches and bites the person annoying it The child—the young child at least—*does not form* a definite idea of inflicting pain and then proceed deliberately to put it into effect When, however, *the stage of self-consciousness* is reached, anger may beget a definite desire to hurt the object *of* it, and if *this does* not find vent in the primitive way of inflicting some bodily injury, it may seek satisfaction by causing pain in other ways as by taunts, jeers, scoldings, or long and deep laid plans of revenge

Here we touch upon what is perhaps the basest of all vices—cruelty A cruel person is one who exults in the pain, mental or bodily suffered by another Cruelty has its basis in anger (and thus is related to the combative instinct), though there is a cold blooded form of cruelty which may be enjoyed without any obtrusive feeling of anger Cruelty, implying as it does self consciousness—the ability to realise the feelings of others—is essentially a human attribute Children who impale frogs and eviscerate flies cannot be said to be cruel, for they know not what they do Nor are the lower animals cruel, seeing that they are wholly unconscious of the sufferings of others Thus the charge of cruelty against the carnivora is unjust These animals generally destroy their victims outright and in the rare cases (e g cat and mouse) where they prolong the suffering they have no knowledge of the pain they are causing When therefore we stigmatise the conduct of the cruel man as "brutal,' we wrong the brutes The animal which attacks another and in so doing causes pain merely responds to a blind unthinking instinct, but man, proud man, who looks before and after is able to realise and take pleasure in the pain he deliberately and by subtle means maybe, sets out to cause It is clearly absurd to speak of his conduct as 'brutal" Rather should we call it devilish, the Devil usually being credited with a goodly share of intelligence We must cease to libel the brutes by designating the basest acts of man as brutal As a matter of fact, they cannot be charged with non moral conduct, seeing that they are devoid of self consciousness

Spite, vindictiveness and actual revenge are all forms of cruelty and thus are rooted in the combative instinct, and so too is hatred which is a kind of persistent anger directed on a particular object Irritability and querulousness are minor manifestations of the same instinct But while some of the worst of man's vices are derived from the fighting instinct so also are some of his best qualities The primitive desire to get the better of another has found expression not in violence alone but in that hearty *spirit of* emulation which is essential to progress and anger in the form of righteous indignation has through the ages moved men altruistically we feel a touch of the sufferings of others and some measure of the anger and the impulse to retaliate which actual experience of these sufferings would excite in ourselves Here, indeed is the source of all our reforms

The Evolution of the Combative Instinct

Two important factors have favoured the evolution of the combative instinct (1) the reproductive instinct, and (2) the struggle for food.

1 Among polygamous species the males, as is well known fight furiously for the possession of the females To aid them in these encounters they are provided with special weapons which (as in the case of the horns of the stag) may only attain full development, and only remain fully serviceable at the breeding season At this time, too animals otherwise docile, may become dangerously aggressive In the case of the female also the combative instinct is employed in the service of the reproductive

function A cat in charge of her kittens will, when danger threatens them, be roused from the tender maternal mood to sudden fury in their defence Here we see the most opposed of all emotional states—love and anger—alike called forth at the bidding of the reproductive instinct Let us not fail duly to appreciate the fact that one and the same individual is endowed with such opposite potentialities I shall return to this point presently

2 The combative instinct is helpful in the food struggle How close is the relation of the one to the other is shown by the effect of hunger the hungry beast is wont to be savage, and the hungry man is proverbially apt to display, in an attenuated form no doubt, some of the ferocity of the hungry beast, after a good meal he subsides into an amiable, pliant mood Even animals usually gentle scramble and fight among themselves for food, but it is among the carnivora especially that the food struggle has developed the spirit of combativeness, and it is, as we shall see, largely on account of his carnivorous propensities that man has grown to be the terrible fighter which in point of fact he is It is true that the carnivora do not ordinarily need to fight their comparatively defenceless prey, but there can be no doubt that the instinct that leads them to seek out and destroy their prey is largely based upon and aided by the combative instinct It must have been a combative impulse which led the first carnivorous mammal to attack its first victim, and this instinct must be of use in enabling the assailant to overcome an unusually doughty opponent As a matter of fact, all the carnivora are ferocious It may be pointed out in passing that the appearance of the carnivora upon the scene has probably had some influence in generating a spirit of combativeness in the species they prey upon, in that some degree of pugnacity is of service to the latter in helping them, especially if acting in combination with others, to resist their assailants

The fact that carnivorism makes for ferocity and develops the fighting instinct has this interest—that man is himself carnivorous Indeed, in the matter of slaughter he leaves all other animals far behind He is the arch slaughterer—*facile princeps* Since the time the pre-human ape took to hunting he and his human descendants have wrought ruthless havoc among the lower animals, and at the present day man not only hunts them, but breeds them for the express purpose of destroying them, chiefly for food, partly for amusement Many a person of gentle nature would be amazed and horrified were he at the end of a long life to see *en masse* the hecatombs of living things done to death on his behoof

I have already alluded to two sharply contrasted aspects of the carnivorous nature It is a fact calling for special note that in spite of the intense ferocity of the carnivora their emotional nature has its softer side The most ferocious carnivorous mother lavishes upon her young a devotion not always to be found in the human mother A vixen will wear herself to skin and bone in the nightly hunt for her cubs, and returning to them "red in tooth and claw" immediately fall into a purring mood Her victims excite in her the ferocity to shatter and destroy, her young, the tenderness to shelter and protect To the one she is the embodiment of terror and destruction, to the other of gentleness and protection These facts are pregnant with meaning for us They remind us that the emotional nature of carnivorous man also is compounded of extremes He, too, has his ferocious and his tender side. The ferocious element in him is the source, as we have seen, of some of his ugliest traits such as cruelty and revenge, while ultimately it stands for the crude egoistic principle that "might is right" The tender element on the other hand, is the fountain of all his virtues The great lesson to be learnt from a consideration of this duplex emotional nature, this taint of the devil this touch of the divine is that either side may be cultivated at the expense of the other, the average person may, according as he has been nurtured, develop into an unmanageable hooligan, fearing neither God nor man, or into an entirely respectable, law abiding citizen

The differing attitude towards one another of the carnivorous mother, her prey, and her cubs, is further instructive in that it affords an example of the strong sympathies and antipathies which are displayed by animals, not only between members of different species, but even between those of the same species and more especially of the same sex Much might be written on this interesting subject It must suffice here to draw attention to the decisive influence of personal likes and dislikes in the conduct of human affairs Dislikes, often amounting to virulent hatred, operate antisocially, conducing as they do, not to peace and goodwill, but to bickerings and bloodshed

When we read of the terrible happenings in the present war we begin to wonder how far civilised man differs in his essential nature from early man in his most savage state. Though man's moral nature has doubtless undergone development since primitive times, he still retains much of the wild beast within him We are apt to forget how very much the individual is, both intellectually and morally, the product of his environment What would the modern civilised man be, intellectually considered, were he not, as regards his knowledge, the heir of all the ages? A modern European child brought up under the same conditions as palæolithic man would probably achieve no more in the intellectual sphere than did he We too readily forget that a man's intellectual powers remain merely potential in the absence of the conditions needful to call them forth This explains how it was that during the long palæolithic age man made little or no advance in knowledge, while during the last century he has more inventions to his credit than during his whole previous career

Applying the same principle to man's moral nature, we shall the better understand how greatly that also is influenced by his upbringing While the innate moral leanings of civilised man are doubtless superior to those of the savage, yet it can hardly be denied—so great is the influence of nurture—that an average European brought up among savages would take quite naturally to their most revolting customs, and, on the other hand, that an average "savage" reared in a European community would make a very respectable and peace-loving citizen Let us, then, ever remember that man, like the tiger, has two strongly contrasted dispositions—the combative destructive, and the tender altruistic—at the same time not forgetting that each of these dispositions is, within due limits, an essential attribute of the normal man The man who has no kind of fight in him, who is prepared to take any affront lying down, who is incapable of being stirred to righteous anger, is but half a man, and one wholly devoid of altruistic feeling is equally abnormal. I say that each of these dispositions is needful within due limits The qualification is necessary, for either may be developed to a harmful degree The combative element may be developed to the point of destructive criminality, the tender altruistic feelings may acquire such intensity as to render life intolerable—the hyper altruist may be undone by the defects of his virtues What, however, I desire to drive home is the fact that, taking any average individual, whether he shall be an outlaw or a decent law abiding citizen will depend entirely upon which of the two sides of his nature shall be nurtured. Nevertheless, and in spite of all this, the most careful upbringing is powerless to change man's normal nature to its very depth, to eradicate all potentiality towards the primitive savage Often the effect of education is but to cover with a thin veneer of moral polish the savage beneath That the primitive passions do but slumber in the civilised man is shown not only by the savage orgies which are wont to occur in wars, revolutions and outbreaks of mob violence, and by the murderous activities of the apache, but even more perhaps by the calculated, cold blooded cruelties of the Middle Ages, as displayed, e g by the agents of the Inquisition and in the devilish treatment meted out to prisoners Let no man suppose that human nature undergoes any essential alteration in the course of a few generations What civilised man was in the Middle Ages such is he in his essential nature to-day It is therefore wisest to regard the young human as compounded of the same two opposite dispositions as are found in the tiger, and as being in large measure a wild untamed creature, needing to be broken in and put through a painstaking training from earliest years if he is to be fitted for the difficult duties of good citizenship

It is not of course possible by education to force everybody into exactly the same mould Individual traits, good, bad, and indifferent will show themselves under any system of moral training Taking any number of persons we may arrange them in a series according to their innate moral proclivities, beginning with the moral idiot, whom no education can greatly better and ending with the moral genius who, with very little guidance, blossoms into the saint Numerous individual differences of character will be met with in such a series, many of which are only discernible and understood by intimate acquaintances, if, indeed, by them Many a potential murderer, many a man capable of carrying out the infamies of the Inquisition, passes in society as a right good fellow and is received as a welcome guest, while many a man of kindly nature is judged harshly simply because he does not wear his heart upon his sleeve

The Influence of Man's Hunting Career and of Tribal Life on the Evolution of the Fighting Instinct

Let us now inquire how it has come about that man has acquired his slaughtering propensities The fact, as fact I believe it to be, that it was the search after animal food which caused our ape-ancestor to abandon the forest, suggests that he already had a good deal of fight in him, as well as enterprise, when he entered upon his hunting career and came to compete with the carnivora for animal food The period which elapsed between the abandonment of an arboreal life and the attainment of human hood, say, when tribal life was fully established, was one in which the evolving man steadily increased in skill as a hunter and in which his combativeness underwent steady evolution, for success in the hunt demanded not only skill and cunning, but courage and the combative instinct

Incidentally I may here reitérate my conviction, already advanced in this journal,[1] that it was the conditions entailed by a hunting career which brought about the evolution of the pre human ape into man. For observe the curious situation—assuredly one of the most eventful and dramatic in the whole of man's evolution—when this creature took to hunting Here was a being lacking the stereo typed equipment for slaughter instinctive and anatomical, of the carnivora but gifted with an intelligence surpassing that of any other creature, and endowed with *prehensile hands capable of giving effect to that intelligence* It was a situation in which intelligence counted in the life struggle as it had never counted before, and it inevitably led to the evolution of a higher type This agile, intelligent hand endowed precursor of man was compelled to rely upon his intelligence in hunting his prey, for blind instinct he had to substitute strategy, for natural weapons, weapons made by hand Once the pre human ape started on his career of intelligent, as against instinctive, hunter, he began a struggle in which it was inevitable that a higher and ever higher grade of intelligence should continue to evolve by natural selection until sufficient mental capacity had been attained to render its possessor supreme in the chase

When tribal life with its attendant inter tribal warfare was established—a warfare in large measure at least for the possession of hunting grounds and districts rich in valuable vegetable foods—the evolution of the fighting instinct received a further stimulus for the more courageous and warlike tribes tended to wipe out the less courageous and more peaceful

Here it is necessary to point out that from the evolutional standpoint inter tribal and modern warfare present a striking contrast In the former not only do all or practically all, the men of the tribe take part in the fight but the percentage loss of the vanquished is generally much greater than that of the conquerors Defeat may indeed mean the partial annihilation of the vanquished if not after a single battle, at any rate after a process of guerilla warfare waged it may be through years Thus the effect of inter tribal warfare has been to further the evolution of the bravest and in even greater degree (I may here add) of the most intelligent, tribes But while as I have elsewhere insisted,[2] inter tribal warfare has furthered man's psychic evolution civilised warfare is eugenically hurtful—for whereas individual tribes can annihilate one another, this is not possible with modern civilised nations When two such nations engage one another in war the percentage mortality for each entire nation is much the same and has little or no ultimate effect upon the proportionate population of each nation The effect of warfare between modern civilised nations cannot therefore lead to the survival of a superior nation at the expense of an inferior one Its effect is rather to work against evolution by causing the elimination of the best physical types (the First Napoleon is said to have taken two inches off the stature of the French nation) and of those who display the most courage and daring Were civilised warfare carried on by voluntary armies alone the effect would be to cause a disastrous elimination of the bravest, I say disastrous, for assuredly courage is one of the noblest attributes of man Even with compulsory service a large proportion of the least brave manage to avoid the danger zone

With the establishment of inter tribal warfare the fighting became the most terrible the world had yet known No longer prompted by blind instinct and carried on with nature's weapons (teeth, claws, horns, and the like), in which victory was generally to the physically *strongest* it became a fight with hand-made weapons, wielded warily and with deliberation a fight in which not only *courage* but intelligence played a part such as it had never played before, for it was intelligence which fashioned the weapons and directed their use and which planned the organised attack.

The chief factors in the evolution of the fighting instinct in man have been the reproductive instinct, the search after animal food, and inter tribal warfare The ultimate effect of these factors has been to make man of all vertebrates the most inveterate fighter Not only does he wage incessant warfare on other species, destroying infinitely more than any other vertebrate, but he also fights persistently with members of his own Except in the struggle of rival males for the possession of the female there is comparatively little intra-speciem fighting among the vertebrates whether gregarious or otherwise, members of the same species live together in a comparative harmony Man, on the other hand, from the dawn of the tribal period up to the present time, has made incessant warfare upon his fellows

When we come to compare warfare as waged between civilised nations with primitive inter tribal warfare we find that far from its terrors being mitigated they are becoming greater than ever Human ingenuity has so exhausted itself in the endeavour to devise the most deadly methods of destruction that it is difficult to imagine anything more terrible than those employed in the present war It is true that modern warfare has at various epochs been robbed of some of its terrors by the spirit of chivalry, though it must be confessed that, much as we may commend that spirit, there is something incongruous in two armies setting about to kill one another in a gentleman like way, with *perfect* willingness to be good friends after vast numbers of their comrades have been mutilated and slaughtered But even among the most chivalrous foes some degree of devilry and frightfulness is apt to creep in, and if the spirit of chivalry is lacking on the one or other side then, indeed, is man seen at his worst, as one compared with whom the famished tiger maddened with blood lust is as an innocent babe

(To be conc uded)

URBAN VITAL STATISTICS

(Week ended Sept 8th 1917)

English and Welsh Towns —In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 11 2, against 10·6 per 1000 in each of the two preceding weeks In London with a population exceeding 4 000 000 persons the death rate was 11·9 or 1 3 per 1000 above that recorded in the previous week among the remaining towns the death rates ranged from 3·6 in Gillingham 4·5 in Eastbourne and 5·6 in Wimbledon to 17 1 in Middlesbrough 16 7 in Aberdare and 18·9 in Gateshead The principal epidemic diseases caused 427 deaths, which corresponded to an annual rate of 1 3 per 1000 and comprised 320 from infantile diarrhœa, 35 from whooping-cough 31 from measles 29 from diphtheria, 10 from enteric fever and 2 from scarlet fever The deaths from diarrhœa, which had steadily increased from 53 to 312 in the seven preceding weeks, further rose to 320 and included 90 in London 23 in Liverpool 14 in Manchester and 12 each in Salford Leeds, Sheffield and Hull The 652 cases of scarlet fever and the 1041 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 30 and 19 above the numbers remaining at the end of the previous week. Of the deaths in the 96 towns 133 resulted from violence The causes of 24 deaths were uncertified of which 4 were registered in Liverpool and 3 in London

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500,000 persons the annual death rate was 12·6 against 10 3 and 11·2 per 1000 in the two preceding weeks The 279 deaths in Glasgow corresponded to an annual rate of 13·0 per 1000, and included 16 from infantile diarrhœa 13 from whooping cough 4 from measles and 2 each from scarlet fever and diphtheria The 73 deaths in Edinburgh were equal to an annual rate of 11·5 per 1000 and included a fatal case of whooping-cough and another of infantile diarrhœa.

Irish Towns —The 137 deaths in Dublin corresponded to an annual rate of 17·9 or 3 7 per 1000 above that recorded in the previous week and included 21 from infantile diarrhœa and 2 from whooping cough The 100 deaths in Belfast were equal to an annual rate of 13 3 per 1000 and included 8 from infantile diarrhœa, 4 from whooping cough and 1 from enteric fever

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[1] Man's Mental Evolution Past and Future The Lancet 19[illegible]

[2] [illegible] 1873 [illegible]

Correspondence.

"Audi alteram partem.

THE PHYSIOLOGICAL AND ANTISEPTIC ACTION OF FLAVINE

To the Editor of THE LANCET

SIR,—The above title appearing over an article by Mr Alexander Fleming in your issue of Sept 1st *is obviously* a misnomer, and one wonders why it was not frankly headed "A Warning Against the Use of Flavine", for in it there are gathered together such assertions and implications as would seem best suited to deter *anyone from testing* the therapeutic properties of flavine antiseptics Unfortunately for Mr Fleming, his experimental facts relevant to the local use of an antiseptic, in so far as they were not contained in our original article,[1] had *practically all appeared* in a second communication,[2] which was published six weeks before Mr Fleming's To take up all his dialectic points would be a waste of time and space, but the more glaring will be referred to Early in the article he states, "This *antiseptic has been* introduced into practice purely as the result of laboratory experiments" What does Mr Fleming mean by this statement? *It can convey only one of two meanings*—either that Mr Fleming would prefer an *antiseptic to be* introduced without any such preliminary test—as he presumably earns his living by laboratory work it may be assumed that this is not *his intention*—or, secondly, it *must signify* that by publishing our original paper we embarked on a warm recommendation of the substance for practical trial at a time when we had no other evidence in its favour than the results of laboratory tests That this was not *the case is proved* by parts of our original paper of which Mr Fleming takes no notice Thus the favourable opinions of the three independent sets of investigators, who had already carried out most *extensive preliminary clinical trials, are quoted*, two of these have also been published separately

To come now to Mr Fleming's experiments First, those concerning the action of flavine on human blood He states *that it agglutinates red blood corpuscles* (a fact to which we drew attention in our original paper when touching on the question of the toxicity of flavine administered intravenously), but he does not add whether he tested *this effect on red* cells *suspended* in *serum* or in saline—a most important point, and one without which the appearance of precision lent by his numerical values is purely fictitious Then flavine is stated *to delay* the coagulation of the blood, apparently this should suit the school of which Mr Fleming is a cadet, for he writes, "Sir Almroth Wright has for many years combined with his hypertonic salt solution some citrate of soda *to prevent clotting* of the lymph in a wound and flavine may be beneficial in this way", but he hastens to add "this action of flavine, however, must be borne in mind when it is applied to freshly incised wounds" Can this mean that Mr Fleming dares to doubt his master in regard to the use of anti coagulants, but that he feels himself at liberty to express his views in the case of flavine, although not when citrate and salt are *under* discussion? *It is worth noting* here that a surgeon of great experience has recently recorded his commendation of flavine precisely because of its property of causing coagulated lymph to appear in wounds In any case, those who have *so* far had no personal experience of flavine can be well assured that the half veiled suggestion of its tending specially to the production of hæmorrhage in *wounds* possesses *no basis of fact* As regards the action of flavine on leucocytes, we have also anticipated Mr Fleming in an investigation on the effects of prolonged contact, and the gist of our observations has been that *even* such leucocytes as have remained for a considerable time (two hours) in contact with a concentration of flavine, which is much more than sufficient *to inhibit growth* of organisms, are yet *able* to exert phagocytic action On the other hand, concentrations of mercuric chloride, which were more harmful to the leucocytes than flavine, lacked all inhibitory action on the bacteria This property of *inhibiting* bacterial growth, which is exhibited by the flavine *antiseptics* up to very high dilutions, appears to us to be of the greatest importance *from the therapeutic* standpoint, since it affords the possibility, especially in recent wounds, of holding the organisms in check while enabling the *natural defensive* mechanisms of the body to come into operation at the same time Mr *Fleming, however, seems* to have no use for such a conception, an antiseptic must kill every organism or it possesses no value for him

His *long contact experiments* with leucocytes which have been rendered moribund through being kept *in vitro* need not detain one Mr Fleming has accused us of having "apparently paid no attention to the time factor" in arriving *at a figure which we used—viz, the* "therapeutic coefficient," or ratio between the concentration of antiseptic which interfered with phagocytosis, and that which killed organisms suspended in serum (We are dealing here with the actual definition which *we gave and not with that which*, for the purposes of his argument, Mr Fleming assumes that we used) There is little point in his contention unless Mr Fleming can show that the majority of efficient phagocytes—i e, those which are capable both of phagocytosing bacteria and then subsequently of destroying them—after having made their diet fail to return *to the tissues*, but sit down on the free surface of the wound until digestion *is complete*, *Colonel* Bond's observations hardly suggest such a view, although no one is very well informed on the matter The really important *fact, however, is that in the case of* the flavine antiseptics there exists such a wide range between the weakest concentration which will suffice to inhibit and eventually to kill organisms in a serous medium on the one hand, and on the other, the great strength which is required to paralyse phagocytosis, hence antiseptic action and the natural defensive processes can be expected to go on side by side No other antiseptic which has been tested affords *results* which justify the belief that with it such will occur to anything approaching the same extent Experiments on the antiseptic action of flavine in blood and pus were described in our first paper, and Mr Fleming's work *adds nothing* new beyond revealing further his inability to grasp the conception that restriction of bacterial activity by means of a chemical agency would represent a valuable therapeutic achievement The same remark applies to the observation, which we have already recorded in our second paper, that a great increase in the number of organisms necessitates a somewhat higher *concentration* of antiseptic in order to effect sterilisation, the degree of this increase was well seen in one of our experiments in which a 20,000 fold increase of bacteria necessitated only about a 2⅓ *fold* increase in strength of *antiseptic! As regards* intravenous injection of acriflavine we have made numerous observations on similar lines to Mr Fleming's but are we to be blamed for not having published them forthwith, seeing that *we have never recommended the use of flavine in order to produce antiseptic action at a distance from the site of introduction of the substance* We did mention that 300 c c of a 1 1000 solution intravenously had produced no ill effect in an adult, but this statement was judged necessary in order that no suspicion might arise as to the possibility of toxic effects following absorption of the substance, which might well *occur in a wound* The *possibility* of conferring antiseptic properties on the urine is an important problem which has already engaged our attention, Mr Fleming's *negative* results demonstrate only that he *seems* to have little conception of the necessity of adjustment of the reaction and other factors in order to secure optimum conditions *In* other words here, as elsewhere, Mr Fleming's *sole* aim *appears to be an attempt to discredit* our work, and to deter those who might be inclined to test the value of flavine by asserting that it has no possible value The unique *property* of being intensified in its *antiseptic* effect by serum seems to be *so* commonplace and contemptible a fact in the mind of Mr Fleming that he passes it by almost without comment Again, the injection of flavine locally into tissues has always been *recommended* with a view to obtaining *contact* between antiseptic and organisms, it has never been suggested that that portion of the dye which had been bound *by the* muscle fibres was *likely* to exercise antiseptic effects Mr Fleming's minced meat experiment is a very old one, as is well known minced tissue absorbs all sorts of substances, *including* the normal protective constituents of the body fluids—i e, complement, *opsonin*, &c, but as comparatively little of a wound surface is likely to be left by the surgeon in a state of

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[1] Browning Gulbransen Kennaway and *Thornton* Brit. Med Jour, Jan 20th 1917

[2] Browning Gulbransen and *Thornton* *Ibid*, July 21st 1917

‘ mincemeat" the experiment does not appear strikingly apposite It appeared to be a hard enough task to demand of an antiseptic that it should not be "quenched" in a serous medium, but now that it has been shown that flavine fulfils this condition, the critic at once complains that it will not act in the presence of excess of mincemeat—this is, indeed an "offensive defensive" on the part of the critic !

The "therapeutic coefficient" already mentioned claims much of Mr Fleming's attention, perhaps the term is to him unpleasantly reminiscent of the ill fated "opsonic index." He says "In regard to flavine, this coefficient, as arrived at by the authors of the expression, gives information so misleading that as a practical test it is quite valueless" Now let it be noted exactly what information we did profess to derive from this coefficient ("TC"), in our first communication we stated "if we find an antiseptic which possesses a high TC value and which at the same time is powerfully bactericidal in the presence of serum, then we know that, as compared with another compound yielding a low TC value, the former substance can be employed in a much higher concentration *qua* bactericidal (and, we might have added, *antiseptic*) efficiency without at the same time damaging the natural defensive mechanism of phagocytosis" One sentence later, in order to place TC in its proper perspective—from which, however, Mr Fleming has no compunction in wresting it—we continued "It must be recognised, however, that the susceptibility of different tissues toward any chemical compound may vary greatly ., we considered that a further valuable indication would be afforded by the behaviour of a delicate epithelial membrane, such as the conjunctiva, towards different dilutions of the antiseptics" In effect we subjected a number of antiseptics to a certain series of tests, then, regarding all the results, we attempted to form a conception of the average of properties In some of these tests, such as the estimation of bactericidal potency and the influence of serum on the latter, known antiseptics, such as phenol and mercuric chloride, yielded results so completely in accord with those of other observers as to afford conviction that our methods were sound, we had also discovered that the flavine antiseptics were distinguished from the rest by outstanding features When on being tested clinically by several independent investigators they were found to be capable of highly successful therapeutic application, then, and not till then, did we conclude that the distinctive behaviour of the flavine compounds in laboratory tests was worthy of publication from a practical point of view, and we added the statement that ‘ the recommendation of this substance for clinical use based on the results of the laboratory tests, has appeared well justified" Mr Fleming has had the substance in his hands (it may be remarked that he obtained his original sample from me personally, although the first evidence of his opinion of it reached me from your pages !) and he has concluded that "the theoretical basis for the use of flavine is thoroughly unsound, and there seems nothing to specially recommend this substance as an antiseptic for use in septic wounds ’ In other words, any surgeon who wishes to employ an antiseptic in wound treatment, and who resorts to Mr Fleming as a scientific tipster, in order to be informed how the backing goes will be told that flavine does not have one point in its favour It is likely that the surgeon will desire to know what has been Mr Fleming's skill in the matter of forecasting previous "events" and he will learn that Mr Fleming's strongest tips in the past have been *the opsonic index as a guide to diagnosis and treatment*, and *Fleming's modification of the Wassermann reaction*—surely two of the most sorrowful "wrong 'uns' that there ever were Mr Fleming's fear of arousing further enthusiasm in matters of scientific medicine can well be understood, but he ought really in the first instance to set right his own tangled accounts before seeking to reform others

I am Sir, yours faithfully, C H BROWNING

PSYCHIATRY IN ENGLAND

To the Editor of THE LANCET

SIR,—Dr Weatherly in his letter in your issue of Sept 8th states that ‘the recovery rate of insanity is no higher to-day (in asylums) than it was in the decade 1865 to 1675 Perhaps Dr Weatherly will excuse my saying that this conclusion is of little value if it has been inferred from a recovery rate calculated on the total number of admissions irrespective of the ages of those admitted, as the recovery rates of all asylums are now adversely affected by the increased number of senile cases admitted.

Surely there must be few, if any, asylums in which "the want of proper departmentisation of cases" occurs, it is an essential feature of the new segregate type of institution, and in many years' asylum experience I have never seen patients with a suicidal tendency placed "on the side of the asylum with the worst cases" unless those particular patients exhibited other symptoms that made them manifestly unsuitable companions for the ordinary type of suicidal case

With regard to the treatment of functional mental disturbances there are functional cases *and* functional cases, and relative to many there is a world of wisdom in the following aphorism of the late Sir Thomas Clouston "What is good is not always pleasant in moral as well as in medical treatment"—I am, Sir, yours faithfully,

H DE M ALEXANDER

Aberdeen City Mental Hospital Sept 10th 1917

TREATMENT OF THE INVALIDED SAILOR OR SOLDIER

To the Editor of THE LANCET

SIR,—May I be allowed to point out an omission in the article on the above in THE LANCET of Sept 8th, p 404 The full statement is, ‘ Payment being made at the dividend rate found to be payable on that scale out of the Central Medical Benefit Fund for the year" (Memorandum 233/I C, par 7, lines 7 8 and 9) The very same words are used in Memorandum 234/I C, "For Issue to Doctors," par 5, lines 7 8, and 9 The *dividend* rate is only 90 to 92 per cent of the scale, and the Memorandum means that the Treasury will bring up any deficit to this dividend rate and not to the full remuneration quoted in THE LANCET—viz, visit 2*s*, &c I have reason to believe that means may be taken to prevent over visiting

Is it necessary to say that the rate of remuneration quoted is too low for the increased and increasing cost of living and carrying on of practice ?—I am, Sir, yours faithfully,

JAMES GARDNER,
Chairman of the Burnley Panel Committee

Burnley, Sept 9th 1917

ORIGINALITY AND ENTERPRISE

To the Editor of THE LANCET

SIR,—The article entitled as above in your issue of to-day is incorrect when it is stated that the Chemical Society is the only British body which publishes an abstract journal "Physiological Abstracts’ which is published by H. K Lewis and Co for the Physiological Society, is now in the second year of its existence, and constitutes what I conceive to be a praiseworthy effort to accomplish what the writer of your article desires Although it does not deal with the immense mass of available clinical literature, it nevertheless interprets the word physiology in a wide sense, and includes an international survey of physiology and allied sciences from the academic point of view, and also, to use a good old phrase, as the Institutes of Medicine. I am asking the publishers to forward you a copy of its latest issue You were good enough to write a friendly notice of this new journal when it first appeared Perhaps you will be able to see your way to glance through the one I send so that you may be able to corroborate what I say regarding its merits or otherwise It is regrettable that the facts were not ascertained before the lack of British enterprise was lamented

I am, Sir, yours faithfully,

W D HALLIBURTON,
Editor of "Physiological Abstracts"

King's College London Sept. 8th 1917

⁂ We were perfectly aware of the facts We have received and reviewed "Physiological Abstracts," and again recommend this serial work cordially to our readers But we were considering in our article the publication of abstracts dealing with medicine generally, as the papers in the *Journal of the Chemical Society* deal with chemistry generally It may be that this is too high an ideal, and that we must rely on the separate branches of medical science for systematised reports on their individual work. In such a category ‘ Physiological Abstracts" would enjoy a high place —ED L

The War.

The Casualty List

The following names of medical officers appear among the casualties announced since our last issue —

Died of Wounds

Capt J H Bampton, R A.M C, attached Royal Field Artillery, was educated at Birmingham University and at Berne, and qualified in 1911 He held the appointment of house surgeon at the Birmingham General Hospital, and prior to joining up was in practice at Gravelly Hill, and was assistant school medical officer for Birmingham

Wounded

Capt L Ball, R A M C, attached Royal Berks Regiment

Capt W Stobie, R A.M C, attached Oxford and Bucks Light Infantry

Capt A J V Mathews, R A.M C

Capt W H Cornelius, R A.M C, attached Worcester Regt

Capt A. W Matthew R A M C

Capt J A Smith, R A M C, attached Gordon Highlanders

Capt H G Janion, M C, R A M C, attached Royal Horse Artillery

Capt J C Sale, M C, R A.M C

Missing

Lieut Col G S Williamson, R A M C

Casualties among the Sons of Medical Men

The following additional casualties among the sons of medical men are reported —

Major G B C Irvine, 9th Bhopal Infantry, India Army died of wounds, eldest son of the late Surg Gen G J Irvine, R N

Private J H Yelf, Canadian Infantry, killed in action, youngest son of the late Dr L K Yelf, of Moreton in Marsh, Gloucestershire

A J E Warburton, London Regiment, died of pneumonia, son of the late Dr A Warburton, of East Molesey

Major J H Ratton, Royal Garrison Artillery, killed in action, eldest son of Lieut Col J J L Ratton, late I M S, of Blackheath, S E

Private D M Jacob, Canadian Expeditionary Force, killed in action, youngest son of the late Dr A. H Jacob, of Dublin

Lieut G E Story, Royal Engineers, died in hospital, son of the late J Story, M.R C S, &c, of Westbourne Terrace road, London

Second Lieut J A Humphreys, Royal Field Artillery killed in action, youngest son of Lieut Col C E Humphreys, R.A M C, J P, county medical officer for Montgomeryshire

Second Lieut T S Hinnell, Suffolk Regt, killed in action, eldest son of Dr J S Hinnell, Bury St Edmunds

Lieut R F Lawrenson, Cheshire Regt, died of wounds, only son of Dr H F Lawrenson, of Muswell Hill, London

The Honours List

Victoria Cross

The much coveted distinction of the Victoria Cross has been conferred upon the following member of the medical profession who is, alas, no longer with us —

Temp Capt Harold Ackroyd, M C, late R A M C (attached Royal Berks Regiment)

For most conspicuous bravery During recent operations Captain Ackroyd displayed the greatest gallantry and devotion to duty Utterly regardless of danger he worked continuously for many hours up and down and in front of the line tending the wounded and saving the lives of officers and men In so doing he had to move across the open under heavy machine-gun rifle and shell fire He carried a wounded officer to a place of safety under very heavy fire. On another occasion he went some way in front of our advanced line and brought in a wounded man under continuous sniping and machine-gun fire His heroism was the means of saving many lives and provided a magnificent example of courage cheerfulness and determination to the fighting men in whose midst he was carrying out his splendid work This gallant officer has since been killed in action

(The announcement of the death of Captain Ackroyd who was a student at Guy s Hospital and practised at Royston Herts was made in The Lancet of August 25th, 1917 p 331)

"Our Day," 1917

An urgent charitable appeal for aid is being made on behalf of the Joint War Committee of the British Red Cross Society and the Order of St John. The danger is that "Our Day," fixed for Oct 18th may suffer if helpers in their thousands do not come forward Women in all parts of the kingdom who have sacrificed their leisure in former years are now giving their whole time to some phase of war work Their places must be filled Organising committees have vacancies, there is urgent need for sellers of "Our Day" emblems, and suggestions for any method of raising funds, by concerts, social gatherings or sports, in particular localities will be gladly welcomed The needs of the Red Cross work were never greater, and they are increasing every day "Our Day" is everybody's opportunity to contribute to the comfort, care, and well being of the Empire's wounded and stricken heroes Already the self governing Dominions, Crown Colonies, and Protectorates have thrown themselves heartily into the movement, which has the best wishes of the King and Queen and Queen Alexandra Red Cross activities at the present moment are costing more than £5 every minute The money is spent in minimising suffering—surely the noblest aim a people can be invited to associate themselves with, especially when it is their own kith and kin who are benefiting To buy and wear a Red Cross emblem on Oct. 18th will be the outward sign of sympathy To do something in the intervening weeks will be really practical support. Miss C May Beeman, the organising secretary, will welcome any offers of assistance addressed to 10 West Bolton Gardens, London, S W 5

The Medical Examination of Aviators —In October of last year the Army Medical Service appointed a special medical board for the examination and selection of flying officers This board was composed partly of army doctors and partly of civilian experts and has been working continuously since it was formed Each candidate is examined by three different doctors, and their reports are then assessed by one or two other doctors, the candidate being again examined if necessary Various tests have been employed, Bárány s amongst others, but experience has shown that it is not advisable to lay too much stress on any one test as a cause for acceptance or rejection The details of the medical examination for flying officers in this country have been formulated after a year's experience, and will be submitted in due course to the Air Board

It is not to be assumed that finality has yet been reached as to the medical examination and *testing of* candidates for flying work. This subject requires a more thorough knowledge of the disabilities which affect flying men than we possess at present It is hoped that further progress will be made in this direction by the study of these disabilities in a special hospital for flying officers which will soon be available. When the type of man who has broken down and the various disabilities which develop in air work have been more thoroughly studied, the selection of the best type of candidate will be carried out with more knowledge and precision than is possible at present

2nd Eastern General Hospital, Brighton —As one of the many adjuncts of the 2nd Eastern General Hospital at Brighton there was opened on August 29th the East Hove Schools, which will be used solely by convalescents, or walking cases, the object being as far as possible to relieve the mother hospital near by for the reception of severe surgical cases Accommodation has been provided for 165 beds and 155 of these were occupied at the little informal opening ceremony There is no operating theatre but there is a finely equipped dressing room The school swimming bath is not to be used at present.

The Employment of American Practitioners in Military Hospitals —In certain Commands it has been decided to supersede the British civilian practitioners at present acting as the staff by American medical men. In this way more British practitioners will be available to meet the pressing home needs which have been made clear by the work of the Central Medical War Committee

OBITUARY OF THE WAR

JOHN BROMLEY RAWLINS, M B, B S Lond,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain J B Rawlins, who was killed in action in France on August 16th at the age of 27, was the elder surviving son of the late John Rawlins, of Erdington, Birmingham, and Mrs Tom Green, of Warren Drive New Brighton. On leaving Bromsgrove School he studied medicine at St. Mary's Hospital, London, graduating M B, B S in 1914 Shortly after the outbreak of war he was granted a commission in the Royal Army Medical Corps (Territorial Force) and was attached to the staff of the 3rd London General Hospital, Wandsworth In the autumn of 1915 he went to France, where he saw continuous service up to the time of his death, which was caused by the bursting of a high-explosive shell in a dressing station His commanding officer writes of him as a charming comrade and a hard working and capable officer

Captain Rawlins was engaged to be married to Sybil, only daughter of Dr Oliver Withers, of Sidmouth, Devon

CHARLES ALFRED WHITING POPE M A., M B Camb.,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain C A. W Pope, who was officially reported "Missing, believed drowned' on the occasion of the torpedoing of the transport *Transylvania*, on May 4th, was in his fortieth year and fourth of the ten sons, originally serving of Alfred Pope, F S A. J P, of Wrackleford, Dorchester He received his education at Twyford School and Charterhouse whence he proceeded to Trinity College, Cambridge, graduating in honours in 1902. He obtained his medical degrees from St. Bartholomew's Hospital a year later, and after serving as house surgeon to the Devon and Cornwall Hospital Plymouth, went to South Africa as resident to the Somerset Hospital, Cape Town Returning to England in 1907 he practised in partnership at Rugby, and subsequently in Hastings and St. Leonards On the outbreak of the war he offered himself for active service and obtained a commission in the Royal Army Medical Corps After two years' service first at Seaford as medical officer to the 7th South Wales Borderers and then in Aldershot, he was ordered to Egypt in April 1917 and it was whilst he was on his way to take up this appointment that he lost his life When the boat was struck he was in the ship's hospital and after seeing that the patients were safe he went to the parade deck Shortly afterwards he heard that several had been wounded down below by the explosion and Captain Pope went with a party to rescue them Whilst dressing their wounds he went down with the ship The facts are stated by two of his companions one of whom was working with him up to a few minutes before the vessel sank.

Captain Pope married in 1909 Marion Ruth eldest daughter of the late Captain J J A Gravener R N, of Avenue House Dorchester His widow with two sons and a daughter survive him

BENTLEY MOORE HUNTER, M.B, Ch B Glasg

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain B M Hunter, who was killed in action on July 31st, aged 29 years, was the fifth son of Charles Hunter, B A., of Drochduil Public School, Dunragit, N B Before leaving the Public Elementary School he gained three bursaries, and afterwards attended the High School Stranraer, for three years Here he early showed a predilection for the science side of the instruction and on leaving joined the medical classes at Glasgow University He was a student of some distinction, prizeman and medallist, and graduated before being of age to practise On attaining the age of 21 he acted as assistant at Consett, Durham for three years, and later to Dr R. Wallace, of Saltcoats, Ayrshire, with whom he continued until he joined the Royal Army Medical Corps in May, 1915 His first year in the Royal Army Medical Corps was passed in Lemnos and Egypt and during the rest of his service he was attached to a regiment which has taken part in several of the most strenuous engagements He had just finished dressing a wounded man when he was struck himself and died immediately

Captain Hunter's chief writes of him "His attention, agreeable and quiet manner, were greatly appreciated by his patients, and he showed that he was well qualified in his profession He will be greatly missed in this neighbourhood'

HENRY YOUNG CAMERON TAYLOR, M B Edin, F R C S Edin,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain H Y C Taylor, who died on August 25th of illness contracted in a military hospital, was third son of the late Alexander Taylor, of Edinburgh He graduated M B, C M Edin in 1896, taking his Fellowship there in 1905 After holding positions as clinical assistant at the Golden square Throat Hospital and the Central London Ophthalmic Hospital he was resident at the Hospital for Sick Children Great Ormond street, and the Huddersfield Infirmary He served as a civil surgeon in the South African Field Force when he contracted enteric fever, but recovered and remained at his post In 1909 he settled at Bexhill on Sea, where he built up a large practice After the outbreak of hostilities he worked under the French Red Cross at Dunkirk for two months joining the Royal Army Medical Corps in April 1915 He was attached for a while to the Hampstead Military Hospital, served on the hospital ship *Britannic* and was then posted to the Royal Victoria Hospital Netley, where he served on the surgical staff up to the time of his illness He was taken suddenly ill with what was at first considered to be influenza, after partial recovery he went home on sick leave passing into a painful condition of septicaemia to which he ultimately succumbed. One who knew him writes of Captain Taylor 'He won the affection of his patients by his invariable kindness and untiring devotion to their welfare while their confidence was

secured by many proofs that he kept himself well informed with modern progress His loss has been keenly felt by a large circle of friends, by none more than the wounded soldiers, to whom he devoted unsparingly the best he had to give Taylor's surgical results were excellent, his handling of the severe septic cases by large incisions and free drainage almost abolished secondary hæmorrhage in his wards at Netley He was a loyal and generous colleague "

Captain Taylor married in 1911 Eothen, eldest daughter of the late Francis E Colenso and grand daughter of the late Bishop Colenso

ANDREW BEACONSFIELD ROSS, M A, M D EDIN,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS

Lieutenant A B Ross, who was killed in action in France on August 6th at the age of 39, was the son of James Ross J P, of Invergordon, Ross shire and was educated at Edderton Public School and at Tain Academy He was a brilliant scholar at Edinburgh University, graduating M A. in 1898, M B, Ch B in 1902, and M D in 1906, gaining the Vans Dunlop scholarship in surgery and physiology and being elected president of the Royal Medical Society After qualifying he held the post of house physician to the Hospital for Sick Children, Great Ormond street, as well as resident posts at the Royal Infirmary, Edinburgh, and the Glasgow Maternity Hospital After a voyage to South America and some experience as assistant in general practice, he went into partnership with Dr J E Judson, of Ashton under Lyne, with whom he was associated for six years

His partner writes of him as a man of exceptional ability, all of whose work was done with a conscientious thoroughness coupled with kindness and sympathy with suffering He will be much missed in Ashton

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HOSPITAL MAGAZINES—With the autumn number of the *Craigleith Chronicle* (2nd Scottish General Hospital Craigleith, Edinburgh, price 6*d*) this magazine ceases to be a monthly publication, but the organisers hope to continue it as a quarterly, and a Christmas number is promised The current issue includes the story of the capture of Baghdad, from the pen of Captain the Rev Dr W Ewing, M C The illustrations are particularly good An editorial note states that the total number of men admitted to Craigleith and its auxiliaries from the beginning of the war, up to and including July 2nd, 1917, amounts in all to 35,829 Craigleith receiving 30 237 — The *Gazette of the 3rd London General Hospital* (Wandsworth, S W 18 Price 4*d*), which, like the preceding, was among the first of the magazines of this class to be published, maintains a high standard, and the illustrations have considerable merit "Strafe the Flies," by Sergeant H J Gilby, is the title of a popular study of *Musca domestica*, and gives in a familiar manner much sound information regarding the house fly as a disease carrier

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THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

To be temporary Surgeons: H E Cockcroft, W S Kidd W Templeton

ROYAL NAVAL VOLUNTEER RESERVE

B J Geekie to be temporary Dental Surgeon

ARMY MEDICAL SERVICE

Col H N Thompson C M G D S O to be temporary Surgeon General while employed as Director of Medical Services

Lieut Col and Bt Col S L Cummins C M G and Lieut Col S F St D Green to be temporary Colonels while employed as Assistant Directors of Medical Services

Temp Lieut Col C E Doherty Canadian A.M C to be Assistant Director of Medical Services

Temp Major F S Burke Canadian A M C, to be Deputy Assistant Director of Medical Services

Col (temp Surg Gen) G D Hunter C B C M G D S O, is retained on the Active List and to be supernumerary

Assistant Directors of Dental Services —Graded for purposes of pay as Deputy Assistant Directors of Medical Services and to be temporary Lieutenant-Colonels while so employed Temp Major C K Gibson Temp Major A. A Smith, Temp Major J E Holmes Temp Major W J Bentley

Graded for purposes of pay as a Deputy Assistant Director Temp Major C Brown Canadian Army Dental Corps

Deputy Director of Dental Services —Graded for purposes of pay as an Assistant Director of Medical Services and to retain the rank of temp Lieutenant-Colonel whilst so employed: Temp Major (temp Lieutenant Colonel) C K Gibson from an Assistant Director of Dental Services

Deputy Assistant Director of Dental Services —Graded for purposes of pay as a Deputy Assistant Director of Medical Services, and to be temporary Major while so employed: Temp. Capt. A W Winnett

ROYAL ARMY MEDICAL CORPS

C T Parsons to be temporary Lieutenant-Colonel while employed at Fulham War Hospital

Lieut Col A J Collis, Cyclist Battalion T F to be temporary Lieutenant-Colonel

Capt C Helm M C, relinquishes the acting rank of Lieutenant Colonel on reposting

The undermentioned are granted temporary rank: As Lieutenant Colonel: Lieut Col James Godding London Regiment (T F) As Major: Major W E M Corbett Devon Regiment (T F)

To be Acting Lieutenant Colonels Major W L Baker and Capt. C C P Cooke (while in command of a Casualty Clearing Station) Major W F Ellis Capt H W Carson and Capt E C Lambkin (while in command of a Field Ambulance)

Temp Capt C Challis to be temporary Major

Temp Capt J R Goodall, Canadian A.M C, to be acting Major while specially employed

T E K. Stansfield to be temporary Honorary Major

Lieut R H C Pryn to be temporary Captain

Temporary Lieutenants to be temporary Captains W H Rayner, M A. Spotswood G D Gripper A. C Dixon C R Howard G A. Lamont G J C Ferrier, R W Miller, D A Farquharson, R. G Michelmore, E N Glover C T Todd H R O Heffernan, C F Davey R L Sinclair F J McCarthy, V L Evans A Grant S J Brennan R D Brennan C A Holburn F C Ormerod G P H Huddy J H D Webster R M Gordon A F W Dunning E D S Heyliger N Kennedy A Wilkin, G J R Carruthers, R D Melville, E Burstal T W E Ross W J Crow T McL Galloway W S McLaren E R Eatock W H Peacock N S Carmichael E S Jeffrey M C Canadian A.M C J McMurray; F C White, N E. Kendall K G Haig J W B Hanington R M Churchill J McFadyen E O Marks, T Stordy F G M Simpson D B Scott R W Davies, M E Delafield, H L Messenger A. Dingwall J W Applegate R H S Marshall P Rose A L Husband H K. Graham Hodgson E G B Carpenter D S Pracy B H Swift, D L Spence H B Scargill E R Holborow, R H Hadfield, D J Foley C J Brookes H I Pinches B H Butcher, B F Bellamy, H B McCaskie R F Moore J Wright M Colt J C Clayton M L Hine, G Rainford, J H Bankes J Finnegan F G Hack T Whitehead T Coogan G L Irwin H P Aubrey J M Anderson H E H Mitchell, A P Adams, I M Ddis H S Knight, R E Collins C M Young S C H Bent, W B Thomson A. C Murray F E L Phillips, F M Gardner Medwin G E E. Nicholls V T C Bent. W C Swete-Evans, E B B Oram, E P Dewar G Viner J P P Inglis, F W Stuart, W Warnock W Gault, F W Perry P J Carroll C R Belcher A. Reeves, W A Reynolds W T Dobson J C Scott F A. Juler H G Brown, E A S Shaw F M P Rice F Corner A S Dawson G H Baird A Jervis J Dulberg R Haslam W Craik J Lindsay, D C Druitt H Greenwood A G Morris, J W Gill, R M Coalbank W E Morgan T S Forrest, S Godding A D Campbell R N West, F H W Brewer R A Shekleton C A Harrison E E Lightwood M J Horgan W C Lattey, R C Smith R S Woods, W G McConnell A. J Bado E H Dendy H L. de Caux A H Manfield, W H O Heffernan, J F Powell R C Macpherson G T Symons E J H. Symons, H B Castle W C Lodwidge

To be Temporary Captains J J Boyd P D Magowan E. V Frederick A D Howard F C Doble, R Warren F S Kidd G M de Vine H A Gillespie T Campbell, Canadian A.M C J D Jones, Canadian A M C M Krolik Canadian A.M C

To be temporary Lieutenants: H D Matthews, C W Freeman E D A McCrea G T Drummond I Ridge Jones G F N Taylor W L Locke H W Crowe P McFadyen, J Muckart, J H C Gordon J E Measham G S Hett, L H D Thornton N Navarra C Barton, J Magill W A Dewhirst, D G Pearson W C Fragoso R B Johnston G M Grundy J A O'Regan W E Peck J C, Auchencloss A Simpson D J Smith R S Harper, C A Hughes J Wypor, S Southall J J Bekenn C C Gruner S Barron S G Gordon J P S Dunn J Cullen F G Sargeant W G Masefield A W Soper P K Muspratt P Howe, W B Eggar J T B Hall R G Meyer A M M Roberts M F Huston J H Dore P Liston R G Ball A. Vost T R Wilshaw R S Woods, Second Lieut R D Passey (from Gordon Highlanders Special Reserve) C F Beyers (S African Medical Corps) J T McAuslin (S African Medical Corps) G R Cowie (S African Medical Corps)

W A. Pride to be temporary Honorary Lieutenant while serving with Crookston War Hospital

To be temporary Honorary Lieutenants: B McB Richardson J F Cooper E A Cayo P D Spohn A H Good

Officers relinquishing their commissions —Temp Majors: R S Rodger (granted honorary rank of Major) J McC Martin D S O Temporary Captains W W Patton, N Tattersall H L Dixon W Elwood S J Staples F H Alfrey W Russell M C L S Shoosmith G Redpath W B Honey E Sheffield P A Sullivan S A Kuny G P Wilson H H Scott T C Reeves C G Galpin (on account of ill health) W J M Marcy R W Young A T Bond P Verdon C A Verge V D Desrosiers P Quesnel C E Tucker A W Bretherton R J Cane (on account of ill health) A. Drouin M C Bridgman (on account ill health), J G Dick (on account of ill health), F W Campbell J F Gill L Horsley J T Murphy A C Keay M Krolik W N Child, W G Scott C A E Ring D J Dauth C Kidd W Sansom W H F F Godwin T J W Swinburne W S Sprent G G Lyttle A F Millar T H Pettit A. H Jacob L Lazarus S T Lewis R K Sutherland Temporary Lieutenants: G Dougan A E Carver, W H Robinson J N McTurk A E Whitehead G M Cameron, E P Duncan A H Bloxsome D H Hutchinson H G Browning S J Haylock E S Park A G Reid M C E Trotter W R D Daglish, J W C van Millingen, J V Rees T Peebles J G Jack H Blakemore J C Ellis P S Clarke, W Dickey H P Miles L Laurie F E Wayte B B Appleby E Evans A H Muir D J Drake A S Ransome H S Burns A R Macdonald V P G Pedrick A J S Pinchin J E Murray C Murray M M Woods, W H Harris W McQuiban J J Gilmore P C V Bent W T Melling D I Connolly G F Page T Dunlop M C Naylor, J A Ure J Maclean J J Ryan R W Davies W T Warwick (on account of ill health) G W Renton L E Fannin (on account of ill health) H R Marsh

SPECIAL RESERVE OF OFFICERS.

Lieutenant on probation D J Steele is confirmed in his rank

To be Lieutenants A H S Maelzer Second Lieut J B Kirk from Unattached List T F A. McL. Pickup J W H. Grice J J Conybeare J G Allan L K. Ledger O C Carter H B Dodwell W W Longford (from University of London O T C) D McEachran. J C Burns S L Smith J O P Smith L. Walker J McI H. Smellie R Mailer W A. Weatherhead C B B Reid J S Bond, D W McLean R Andrew J H R Smith J P Campbell J H Brown, N P B Galloway W W Brown (from Edinburgh University Contingent O T C) B W Jones A. Y Milne (from Aberdeen University Contingent, O T C) R J L. Fraser T Forrest A. B Austin (from Glasgow University Contingent O T C) A B McAulay Lang F W Sandeman D S Mitchell

Capt W H E McCarthy M C relinquishes the acting rank of Lieutenant Colonel on reposting

Second Lieut H. B Dyke from Unattached List, T F, to be Lieutenant

TERRITORIAL FORCE.

Capt. G R. Wilson to be Major

Capt C P C Sargent, from T F Res to be Captain

Capt. R. E Humphrey is seconded for duty with a General Hospital

Lieut E R Marle to be Captain

TERRITORIAL DECORATION

The King has conferred the Territorial Decoration upon the undermentioned officers of the Territorial Force R A.M.C: East Anglian Field Ambulance Lieut-Col. John Howard-Jones Major Henry Waite (attached R E Signal Service) Major Duncan Gray Newton (attached York and Lanc. Regiment)

Medical News.

THE NATIONAL FOOD REFORM ASSOCIATION —The executive committee of this association in April last passed a resolution welcoming the action of the Ministry of Food in recommending communal kitchens, as making for individual and national economy and a better nourished population" The system has been widely adopted, and the committee claims that it has been generally recognised that it results in saving foodstuffs, fuel, and labour, diminishes waste, and affords opportunity for improving cookery The committee has already been able to assist both public and private promoters of such kitchens in town and country and offers to be of service to local authorities and others Being wishful to secure as complete information as possible, the committee will be glad to receive particulars regarding any central kitchens These should include (1) nature of management—i e local authority, society, or *ad hoc* committee (stating whether wage-earners are represented), (2) scope—i e, whether for children, adults or both, (3) days or hours open, (4) whether any meals are served on the premises, (5) section or sections of the community using same (6) date of opening, (7) average number of meals served daily, (8) approximate population, (9) experience, training and salary of manager and cook, (10) number of staff including volunteers, if any, (11) menus for a fortnight with tariff (12) financial result—i e whether self supporting and, if not, how deficit met (stating if premises are rent free or at a nominal charge), (13) copies of any descriptive leaflets circulated and (14) any general remarks or suggestions based on experience

IN connexion with a child welfare scheme, the Newry urban council have decided, subject to the consent of the Newry board of guardians to open a maternity centre in the dispensary and to pay Dr R Flood £20 for his services in connexion with it

THE LATE MR DAVID CHRISTIE, L R C P EDIN —Mr D Christie who died recently at his residence Carrigart, close to the famous Rosapenna golf links, co Donegal was one of the oldest medical practitioners in Ulster For upwards of half a century he had been medical officer of Carrigart Dispensary District, and was a very well known medical man in co Donegal His early professional life was passed as a surgeon in charge of emigrant sailing ships and he had medical charge of the *Stradacona* and the *Minnehaha* during the years 1865 and 1866, these being the last of the sailing ships on which emigrants embarked for America from the port of Londonderry

A MEDICAL ANTIQUARY —Mr Henry Laver M R C.S L S A consulting surgeon to the Essex and Colchester Hospital who died at his residence Colchester on August 31st aged 87 was a well known antiquary and an authority on architecture and local history For over 50 years he practised medicine in Colchester, taking at the same time an active interest in all that concerned the welfare of the borough in which he lived In 1555 he held the office of mayor He was chairman of the Colne Fishery Board and of the borough and port health committee curator of the Colchester Museum an ex president of the Essex Archæological Society and the author of a work on the mammals of Essex

A RED CROSS CONFERENCE —A meeting is being held at Geneva consisting of delegates of Red Cross Societies of Denmark, Spain, Holland, Norway, and Switzerland, to discuss means for the relief of prisoners of war in the belligerent countries

PRESENTATION TO PROFESSOR HASLAM —Mr W F Haslam, F R C S, professor of surgery in the University of Birmingham and surgeon to the Birmingham General Hospital with which institution he has been connected for 36 years, was presented on Sept 10th, on the occasion of his retirement with an address and his portrait in oils to be hung on the walls of the hospital At the same time Mrs Haslam was presented with a diamond and pearl pendant

HEALTH OF BELFAST —A Belfast correspondent writes — "It is satisfactory to record that between July 22nd and August 18th, as reported to the September meeting of Belfast city council the average annual death rate (11 4) and that from zymotic diseases (0 7) were lower than in the corresponding period of last year, and that the death rate from chest affections was only slightly higher (3 3 instead of 3 2)"

PORTSMOUTH INFECTIOUS DISEASES HOSPITAL —An extension of this hospital was opened on Sept 5th It consists of two pavilions with 63 beds, an observation block operating theatre nurses' home, &c, which have been erected at a cost of £30,000 The observation block contains 20 beds all in single wards, with glass partitions between each ward This enables observation to be kept from a central room, and provides complete isolation of every case so that there is no chance of cross infection There are now 264 beds in the hospital, being one bed per 1000 of the population the provision which the Local Government Board requires

THE ROYAL SANITARY INSTITUTE —At the Town Hall, Chatham on Sept 29th, a meeting of the institute will be held when discussions will take place on Some Points in Epidemic Cerebro-spinal Meningitis, introduced by Surgeon A G L Read, R N V R, assistant medical officer London County Council, on Some Aspects of the Housing Problem, introduced by Mr J Holroyde, medical officer of health for Chatham, and on Public Abattoirs, introduced by Mr R L Honey, the assistant borough surveyor of Chatham The chair will be taken at 10 30 A.M by Lieutenant-Colonel H R Kenwood, R A.M C After luncheon visits will be made to the Royal Naval Hospital, the Army abattoir and bakery, and Rochester Cathedral Further particulars can be obtained from the honorary local secretary Mr J Holroyde, Health Department, Town Hall, Chatham

THE name of Dr John Phillips, consulting obstetric physician to King's College Hospital was inadvertently omitted from the list of the hospital staff in our last Students Number

THE DOMICILIARY SUPPLY OF DRUGS TO THE SICK POOR —Lewisham guardians have been making inquiries as to the method adopted by the various metropolitan unions for supplying drugs to their outdoor sick poor Replies were received from 22 unions and from these it appeared that the district medical officers of Lewisham are the only officers in the metropolis having to provide a surgery and to supply drugs at their own expense The salaries paid to district medical officers vary considerably throughout the metropolis and are governed to a large extent by the number of orders received by the medical officers No reliable statistics are obtainable in respect of any year after 1914 For that year the undermentioned is the rough average payment per order made to the district medical officers of the 22 unions or parishes which had supplied information Camberwell, 2s, Chelsea 5s 3d (some drugs supplied through local chemists) Fulham, 2s 1d Greenwich, 3s 10d, Hammersmith, 2s 10d (in one district (17 orders) £5 per annum allowed for drugs), Hampstead 6s Holborn, 8s 4d, Islington, 2s 5d Lambeth 2s 10d (in five districts drugs are supplied under contract with local chemists), Lewisham, 2s 6d (drugs and surgery provided by medical officers), City of London, 15s 2d Paddington 3s 3d, Poplar, 2s 5d (additional £10 per annum allowed for drugs supplied after dispensary hours) Shoreditch, 2s 6d Southwark 4s 6d, St George in the East, 3s 2d St Marylebone, 3s 11d, Stepney, 3s Wandsworth, 2s 11d (in three districts salaries include cost of drugs), City of Westminster, 6s 8d, Woolwich, 3s 9d (in one district (60 orders) £12 10s per annum allowed for drugs) It is estimated that each order entails an average of four "visits" The Bermondsey and Bethnal Green guardians have adopted the modern method of putting the medical relief of their respective districts under the direction of the infirmary medical superintendent and his assistants and the Lambeth guardians have this system in force in four of their medical relief districts

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to The Lancet *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

Bevan, T. W., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer for the Nantyglo District, Monmouthshire.

Keating, N., L.R.C.P., L.R.C.S. Irel., Assistant Superintendent to the Tuberculosis Prevention Scheme in Sheffield.

Meachen, George Norman, M.D. Lond., Superintendent of the Headingham and Black Netley Joint Sanatoria for Consumption in the county of Essex.

Patey, Walter, M.D., B.S. Lond., L.R.C.P. Lond., M.R.C.S., Acting Medical Officer for the Kingsteignton District by the Newton Abbot (Devon) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

Applecross Parish Council.—Medical Officer and Public Vaccinator for the Torridon District. Salary £350 per annum, with house, &c.

Birkenhead Borough Hospital.—Junior House Surgeon. Salary £175 per annum, with board, &c.

Birmingham, Little Bromwich Fever Hospital.—Female Assistant Medical Officer. Salary £300 per annum, with board, &c.

Bolton Infirmary.—Female Locum Tenens Assistant House Surgeon.

Bristol Royal Infirmary.—House Physician and House Surgeon. Salary at rate of £120 per annum, with board, &c.

Brixton Dispensary, Water Lane, S.W.—Resident Medical Officer. Salary £200 per annum, &c.

Bury Infirmary.—Junior House Surgeon. Salary £150 per annum, with board, &c.

Dartford, Kent, City of London Mental Hospital.—Temporary Assistant Medical Officer. Salary £7 7s. per week, with board, &c.

Derby, Derbyshire Royal Infirmary.—House Physician and Casualty Officer. Salary £200 per annum, with board, &c.

Dudley, Guest Hospital.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c. Also Assistant House Surgeon. Salary £120 per annum, with board, &c.

Glamorgan County Asylum, Bridgend.—Temporary Assistant Medical Officer. Salary £6 6s. per week, with board, &c.

Gloucestershire Royal Infirmary and Eye Institution.—Assistant House Surgeon. Salary £150 per annum, with board, &c.

Hampstead General and *North-West London Hospital*, Haverstock Hill, N.W.—Honorary Dental Surgeon.

Harrogate Infirmary.—House Surgeon.

Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Resident Officer. Salary £250 per annum, all found.

Hull Victoria Hospital for Sick Children.—House Surgeon.

Kensington and Fulham General Hospital, Earl's Court, S.W.—Resident Medical Officer.

Leeds Public Dispensary.—Resident Medical Officer. Salary £200 per annum, with board, &c.

Nottingham and Midland Eye Infirmary.—Ophthalmic House Surgeon.

Portsmouth, Royal Portsmouth Hospital.—House Surgeon for six months. Salary £250 per annum, with board, &c.

Prince of Wales's General Hospital, Tottenham, N.—Honorary Anæsthetist once a week. Salary £20 per annum.

Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physicians for Monday afternoons and Saturday mornings. Salary at rate of £25 per annum, with lunch.

Rotherham Hospital.—Junior House Surgeon. Salary £150, with board, &c.

Sheffield Royal Infirmary.—Two House Surgeons. Salary £120 per annum, with board, &c.

Southampton, Royal South Hants and Southampton Hospital.—House Physician.

South London Hospital for Women, South Side, Clapham Common, S.W.—Female House Physician and *House Surgeon for six months.* Salaries at rate of £100 per annum each, with board, &c.

West Bromwich District Hospital.—Senior House Surgeon, unmarried. Salary £160 per annum, with board, &c.

Wigan Royal Albert Edward Infirmary.—Junior House Surgeon. Salary £200 per annum, with board, &c.

The Chief *Inspector* of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Long Eaton, Derby.

Births, Marriages, and Deaths.

BIRTHS.

Andrews.—On Sept. 2nd, at *Corran, Lochgilphead, Argyll*, the wife of Dr. Alford Andrews, of a daughter.

Frye.—On Sept. 4th, at Mount Park-road, Ealing, the wife of Captain Colin C. Frye, R.A.M.C., of a son.

Sandilands.—On Sept. 8th, at Campden hill-gardens, W., the wife of *John E. Sandilands*, M.C., M.D., temporary Captain, R.A.M.C., of a son.

Tyrrell.—At 15, Sanderson road, Newcastle-on-Tyne, on Sept. 7th, the wife of Captain E. J. Tyrrell, R.A.M.C., of a son.

MARRIAGES

Black—*Grant.*—*On Sept. 6th, at Tombal Church*, Glenlivet, George G. McLean Black, M.A., M.B., C.M., to Lena, only daughter of the late Colonel George Smith Grant, Minmore, *Glenlivet.*

Collingwood—Wilkinson.—On Sept. 8th, at St. James's Church, Spanish-place, Captain B. J. Collingwood, R.A.M.C., to Grace Jane, only daughter of Mrs. C. W. Wilkinson, of Hampstead Way, N.W.

Duggan—Gattey.—On August 21st, at St. Gregory's, Harpford, South Devon, Norman Duggan, M.B., F.R.C.S., Temporary Captain, R.A.M.C., to Mary Heath Gattey, late Q.A.I.M.N.S.R.

Graham Hodgson—Jenkins.—On Sept. 4th, at St. Peter's, Chertsey, Captain H. Kingston Graham Hodgson, R.A.M.C., and Winifred Elizabeth, daughter of Mr. and Mrs. George Jenkins, of Burley Orchard, Chertsey, and Kensington Terrace, Newcastle.

Hutchison—Mahaffy.—On Sept. 6th, at St. Matthew's Parish *Church, Brixton, Cyril B. Hutchison, Captain, R.A.M.C., to* Grace Paxton, only daughter of his honour Judge and Mrs. Mahaffy, of Bracebridge, Ontario, Canada.

DEATHS

Thomson.—On Sept. 11th, at Monkchester, Bournemouth, John *Roberts Thomson, M.D., F.R.C.P., L.R.C.S.*, aged 73.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

Allen, George, and Unwin, London.

Theophrastus and the Greek Physiological Psychology before Aristotle. By Professor G. M. Stratton. 8s. 6d. net.

The Economic Anti-Christ. By the Rev. W. Blissard, M.A. 6s. net.

Badger, R. G., Boston. Copp Clark, Toronto.

Philistine and Genius. By Boris Sidis, A.M., Ph.D., M.D. $1.00 net.

Blackwood, William, and Sons, London and Edinburgh.

Besieged in Kut and After. By *Major Charles H. Barber, I.M.S.* 5s. net.

Department of Pathology, College of Physicians and Surgeons, Columbia University, New York.

Reprints. Vol. XV. 19 6.

Government Printing Works, Freetown, Sierra Leone, W.A.

Formulary of Certain Drugs Used in the Treatment of Tropical Disease. Compiled by T. F. G. Mayer, M.R.C.S. Eng., L.R.C.P. Lond., Senior Medical Officer, Sierra Leone.

Imprimeries Réunies, 8, Rue Rachais, 8, Lyon.

Les Séquelles des Plaies de Guerre du Poumon (Manifestations *Cliniques et Conduite à Tenir). Par le Dr. E. Malespine.*

Laurie, T. Werner, London.

German East Africa. By A. F. Calvert, F.C.S. 6s. net.

Pan's Punishment. By Francis D. Grierson. 2s. 6d. net.

A Secret Service Woman. By Henry de Halsalle. 2s. net.

Women's Work in War Time: *A Handbook of Employments.* Compiled and edited by H. M. Usborne. With a *Preface by Lord* Northcliffe. 2s. net.

Maloine, A., et Fils, Paris.

Les Applications Thérapeutiques des Ions.

Masson et Cie, Paris.

Otites et Surdités de Guerre. Par les Dr. Bourgeois, Oto-rhino-laryngologiste des Hôpitaux de *Paris*, et *Dr. Sourdille*, Ancien Interne des Hôpitaux de Paris. 4 fr.

Le Paludisme Macédonien. *Par* P. Armand Delille, P. Abrami, G. Paisseau, et Henri Lemaire. Préface du Pr. Laveran. 4 fr.

Exploration Radiologique des Voies Urinaires. Par le Dr. Arcelin, Chef de Service de Radiologie aux Hôpitaux de Lyon. 6 fr.

L'Appareillage dans les Fractures de Guerre. Par Paul Alquier, Médecin Aide-Major, *Ancien* Interne des Hôpitaux de Paris, et J. Tanton, Médecin Principal, Professeur Agrégé du Val-de-Grâce. 7 fr. 60.

Mental Culture Enterprise, The, 329, High Holborn, W.C. 1.

The Ideal Nurse. An Address to Nurses delivered to the Nursing *Staff of the Retreat at York at the Opening of the Winter Session*, 1909. By Charles A. Mercier, M.D., F.R.C.P., F.R.C.S., &c., *at that* time Chairman of the Education Committee of the Medico-Psychological Association. 1s. 3d. net.

Murray, John, London.

The Canteeners. By Agnes M. Dixon. 3s. 6d. net.

Published for the Civic Federation of New Haven on the Anna M. R. Lauder Memorial Foundation, Yale University, by the Yale University Press, New Haven, Conn., and *New York City*.

Health Survey of New Haven, Connecticut: A Report Presented to the Section on Sanitation. By C. E. A. Winslow, James C. Greenway, and D. Greenberg, Yale School of Medicine. 75 cents net.

Rockefeller Institute for *Medical Research*, 66th-street, New York, U.S.A.

Studies from Rockefeller Institute for Medical Research. Reprints. Vol. XXVI.

University of Chicago Press.

The Biology of Twins (Mammals). By Horatio Hackett Newman. $1.25 net.

Yale University Press (*Humphrey Milford*), London.

Organism and Environment, As Illustrated by the *Physiology of* Breathing. By John Scott Haldane, M.D., LL.D., F.R.S., Fellow of New College, Oxford University. (Silliman Memorial Lectures delivered at Yale University.) 5s. 6d. net.

Year *Book Press*, London.

Girls' School Year Book (Public Schools): The *Official* Book of Reference of the Association of Head Mistresses, 1917.

Notes, Short Comments, and Answers to Correspondents.

THE CAUSATION OF SEX

To the Editor of THE LANCET

SIR,—Professor F R Lillie has just published a most interesting paper on "Sex determination and Sex differentiation in Mammals" Proceedings of the National Academy of Sciences U S A. July, 1917, p 470) It deals largely with his researches on the question of the free martin in cattle With your permission I quote two passages "We must regard sex as determined in the usual sense of the word, at the time of union of the gametes The question, however arises whether sex-determination involves an irreversible tendency to the corresponding sex-differentiation, or whether such differentiation is more or less controllable or even completely reversible?" Again at the end of this paper after discussing his own results, Lillie writes "Nor can it be predicted in advance what the result of the inverse experiment might prove to be i e treatment of the male zygote from the beginning of sex-differentiation with female hormones Such experiments will be necessary for the full solution of the stated problem We can, however, state confidently on the basis of the present results that sex determination in mammals is not irreversible predestination, and that with known methods and principles of physiology we can investigate the possible range of reversibility "

I am, Sir, yours faithfully,

London N W., Sept 1st 1917 LEONARD J KIDD

AN EXCELLENT BABY BOOK.

WE have received from the Provincial Board of Health, Parliament Buildings, Toronto, a pamphlet of 54 pages entitled ' The Baby and designed to teach the mother how to care for her infant and keep it well The information is accurate and helpfully expressed and in good taste. A novel laxative for the mother is given as 'Ordinary bran eaten raw with wholesome cream is often extremely beneficial" We congratulate the Ontario Health Board and Dr J W S McCullough its chief officer on what cannot fail to be a useful piece of propaganda against preventible infantile disease and mortality The frontispiece reproduces the group "Motherhood" from the Victoria Memorial London

DOMESTIC MEDICINE AMONG SPIRIT RAPPERS

IT is a question whether the fashionable combination of spiritualism and sheer quackery which prevailed some 50 years ago has ever been paralleled, even in the age of Christian Science Looking over old letters a correspondent has found the following message received in October 1872 by old ladies who at the time were regarded as very cultivated persons They believed it to emanate from the spirit of their grandmother, a somewhat stern Low Church woman a friend of John Wesley Born in 1777, she abandons a century later the notably Johnsonian style of her still existing memoirs and thus expresses herself

'Send my message with loving haste to my suffering child She will be comforted by my words Tell her to take courage She will need much care during the winter but she must not be down hearted Such a very severe attack will leave her very subject to cold She will derive much benefit from *Bryonia* if she will only persevere That with *Aconite* is invaluable Send her a little book like yours dear X and then she will not be frightened The simpler the directions the better No complicated book will be of any use to her Do you understand, dear X.? She might save herself and her children more serious illness by taking indisposition in time by these precious simple remedies Do not delay sending her this relief for her cough *She need have no compunction in taking them unknown to her doctor* Have faith and confidence in these wonderful medicines One drop in a tablespoonful of water every two hours is not bad for her The usual dose is two or three drops in half a wine glass of water at night or morning but should the dose be repeated through the day do not take more than one drop at a time For a cough take *[illegible]* and *Aconite* alternately Tell Jane what a harmless and comforting thing syrup of horehound is for softening the irritation caused by the cough Farewell dear ones

The last touch being orthodox might well emanate from some spirit of old date Horehound was a famous eighteenth century remedy The cold which Jane suffered from was a violent form of influenza which visited Fifeshire in the autumn of 1872 after a long, cold and wet Scotch summer by Dr Bell a then well known [illegible] it was very customary at [illegible] in [illegible] with [illegible] and an effervescing mixture but when sent his patients to bed This particular patient suffered from abscesses in both ears Old letters from which the above notes have been taken, are often full of such quaint accounts of illness and self medication, and even as lately as the latter half of the nineteenth century are often an epitome of superstition, even when written by highly cultivated people

THE SUMMER TIME ACT

THE Home Secretary gives notice that summer time" will cease and normal time will be restored at 3 o'clock (summer time) in the morning of Monday next Sept 17th, when the clock will be put back to 2 A M Thus, the hour 2-3 A M "summer time" will be followed by the hour 2-3 A M "Greenwich time" It was on April 8th 1917, that this year's period of summer time started in this country In the year 1916 it commenced May 20th-21st and ended Sept 30th-Oct 1st In 1917 it has thus started six weeks earlier and will end two weeks earlier than in 1916

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST GRADUATE COLLEGE West London Hospital, Hammersmith road W

MONDAY —2 P.M. Medical and Surgical Clinics. X Rays. Mr Gray Operations Mr B Harman: Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY —2 P.M. Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations Dr Banks Davis Diseases of the Throat, Nose, and Ear Dr Pernet Diseases of the Skin.

WEDNESDAY —10 A.M. Dr Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose and Ear 2 P.M. Medical and Surgical Clinics X Rays. Mr. Pardoe Operations.

THURSDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Gray: Operations. Mr B Harman Diseases of the Eye.

FRIDAY —10 A.M. Dr Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat Nose, and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M. Dr Saunders Diseases of Children Dr Banks Davis: Operations of the Throat Nose and Ear Mr B Harman: Eye Operations. 2 P M., Medical and Surgical Clinics X Rays. Mr Pardoe: Operations

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office, Sept 12th, 1917

Date.	Rain fall	Solar Radio in Vacuo	Maximum Temp Shade.	Min. Temp	Wet Bulb	Dry Bulb	Remarks
Sep 6		104	72	59	59	60	Overcast
" 7	0·15	89	69	60	58	61	Overcast
" 8	..	104	75	57	57	59	Fine
" 9	..	75	66	53	60	61	Showery
" 10	0·04	90	69	60	60	62	Cloudy
" 11	..	92	72	58	60	62	Overcast
" 12	0·27	102	72	53	54	59	Fine

Other information which we have been accustomed to give in these Readings" is withheld for the period of the war

The following journals, magazines, &c. have been received — Journal of Laryngology Rhinology and Otology American Journal of Roentgenology Canadian Practitioner and Review Archives of Internal Medicine Archives Médicales Belges M D (an American journal for medical defence) Homœopathic Recorder Dublin Journal of Medical Science Bristol Medico-Chirurgical Journal American Journal of Orthopedic Surgery Quarterly Journal of Microscopical Science Annales de l'Institut Pasteur Birmingham Medical Review Bulletin of the Johns Hopkins Hospital, American Journal of Surgery Edinburgh Medical Journal, Journal of State Medicine

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A Method OF WOUND TREATMENT

BY THE INTRODUCTION OF LIVING CULTURES OF A SPORE BEARING ANAEROBE OF THE PROTEOLYTIC GROUP

BY ROBERT DONALDSON, M A, M.B, CH B EDIN, F R C S EDIN, D P H,
BACTERIOLOGICAL SPECIALIST WAR HOSPITALS, READING PATHOLOGIST ROYAL BERKS HOSPITAL, ETC
AND
J LEONARD JOYCE, M.A, M B, B C CAMB, F R C S ENG,
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(Report to the Medical Research Committee)

AT the outset of this paper we wish to emphasise the fact that it is strictly of the nature of a preliminary communication, which does not embrace all the work we have done or are doing in this particular line of investigation We furnish however, the principles underlying this form of wound treatment and are conscious that improvements in its method of application or modifications of certain theoretical statements in connexion therewith may later be found necessary

Our excuse, and a valid one we trust, for putting forward the result of our investigations at this stage is the urgency of the situation, and while much of the detail remains to be worked out the method here described can be made use of *now* in the treatment of wound infections The subsidiary questions arising from it are being worked out at leisure, but owing to pressure of routine work the results are not yet ready for incorporation in this paper As however, we believe the main principle to be sound and the need for its recognition and practical application to exist now in an acute form, we venture to hand on the main results we have arrived at so far

METHODS OF WOUND TREATMENT

The problem of the best method of wound treatment after three years of experience in the theatre of war is still unsolved That which will be most conservative of human life and limb which will curtail the convalescence of the wounded man which is easy of application, and at the same time requires least attention will surely be acclaimed the best method of treatment At the outset of war treatment by antiseptics was the general rule, but it was soon recognised that ordinary antiseptic methods of pre war time days were futile in attempting to combat the gross infections of these wounds At this juncture Sir Almroth Wright came forward as the opponent of antiseptic treatment and proposed the so called physiological treatment' by means of hypertonic saline solutions We are not concerned here, however with the question of antiseptics *versus* saline or with any attempt to find fault with the method of treatment recommended by Sir Almroth Wright In our opinion the chief merit of Wright's work lies in the fact that he helped to break the spell which had bound surgeons to antiseptics and called attention to ordinary salt as an alternative method Out of this method another was evolved which in turn has led to the new method which we put forward in this paper Colonel H M W Gray C B basing his theories of treatment on those formulated by Wright introduced in order to promote a so called lymphagogue action and to obviate the need for elaborate drainage or continuous irrigation the method of treatment by salt packs Briefly put the merit of the salt pack lies in the ease with which it can be applied in the fact that it can be left *in situ* for five or six days without requiring renewal with all the advantages this carries with it to the patient and in the fact according to its inventors that it effects more or less closely the changes which Wright insists upon are necessary for the rapid and successful cleansing of a wound from infection Whether or not the salt acts physically as Wright and his followers believe, we do not propose to discuss now, although on the lines of their explanation there is much that requires further elucidation Suffice it to say that according to them the salt acts in the first instance as a lymphagogue, so preventing a wound becoming what Wright calls "lymph bound", that the lymph flow tends to loosen sloughs so that they come away more readily, that later the salt solution of reduced tonicity has a chemio tactic influence on the leucocytes which together with the salt present complete the victory over the invading bacteria

Results of Treatment with Salt Pack

Of all the methods of wound treatment in use, one of us (L J) early became a convert to the salt-pack method, with results which were in the majority of cases all that could be desired, and which coincide with the published results obtained by all those who have given this method of treatment a fair trial The adoption of this method has considerably curtailed the patient's period of convalescence, and has, moreover, succeeded where other methods have failed, including the much advocated Carrel-Dakin procedure

The wounds were generally five or seven days old at least before the patients arrived in Reading, and came with a variety of dressing They were mostly gunshot wounds, and as such practically always involved muscle, parts of which were dead or dying as a result of the trauma. The tissues were generally dirty, sloughy and purulent while the surrounding area was frequently œdematous Where the patient was obviously ill, in pain, and running a temperature, it was marvellous to find that in three days after the salt pack had been introduced the temperature fell to normal and that in a week or ten days' time the wound was a healthy bright red colour and well covered with firm granulations This result was achieved with the minimum of discomfort to the patient, since after the first packing it was unnecessary to redress it for some five, six, or seven days In this way rest, one of the great allies in successful healing, was obtained The fall in temperature, and the mental quietude engendered by the knowledge that no daily dressing was to be looked forward to, contributed to the patient's welfare He was able to obtain refreshing and normal sleep and his appetite generally improved, so that many of the vicious circles in operation were thus broken

Impressed with the results obtained, we were anxious to know exactly whether the bacterial content of wounds so treated was actually less than before the treatment was begun, in other words we desired to know if, apart from the claims of the protagonist of the method as to its physical properties in the wound the salt had any definite and marked bactericidal action either directly on the organisms or indirectly through the leucocytes To this end a series of observations were made before and after the salt pack had been removed with, however, disappointing results The bacterial flora seemed to be as numerous immediately after removal of the salt pack as before it and the pursuit of this investigation was abandoned owing to pressure of other routine work Nevertheless the results *qua* the healing of the wound were excellent and not being able to accept the theories put forward in explanation of its efficacy we still remained in the dark That the wounds did well and got well probably sooner and with less disturbance than by any other method was a clinical fact beyond dispute How it did so we could not tell and this is in accordance with the published statements of all others who employ this line of treatment Men begin tentatively to try the method rapidly become converts to its use, and, while acknowledging its extraordinary effect on wounds profess ignorance as to the principles which underlie it

THE FOUL ODOUR OF SUCCESSFUL CASES ISOLATION OF ANAEROBE

With this problem still unsolved it was noticed that while the majority of cases treated with the salt pack did well and followed a more or less stereotyped course towards complete recovery one or two cases were outstanding exceptions and recourse was had in these to other methods of treatment Why some cases treated in exactly the same way as the others should not improve formed a new problem until a clinical observation—and on this hinges the subsequent work—was made by one of us (L J) This observation is of crucial importance It had been noted by all who came in contact with wounds so treated, as it has been

all who have adopted this method, that a powerful and most offensive odour was emitted from the salt-packed wound Girling Ball,[1] for example, to quote one, says that the "foul odour is not an indication for changing the plug" Others say that the odour is a signal for change of dressing No one attempts an explanation except in one paper[2] we have read where the view is expressed that it is due to a "decomposition in the dressings themselves" It was noted, however, by one of us (L J) in the course of clinical work that one or two of those cases which failed to improve were also devoid of this peculiarly offensive fœtid odour, and on recalling one or two previous cases that had not progressed satisfactorily it was remembered that they too were devoid of odour

On considering together this phenomenon, and its possible explanation, we came to the conclusion that probably in the evil smelling but successful cases there was present a bacterium which was absent from those which did badly and which did not smell The idea was at first conceived that the salt pack might produce physical conditions in the wound which favoured the growth of this bacterium, and that the good results of the treatment might be directly due to its activity Taking everything into consideration, it was thought by one of us (R D) that the organism present was most likely to be an anaerobe, and steps were accordingly taken to determine the presence or absence of such an anaerobe or anaerobes A case was chosen from which the salt pack was about to be removed This case was one which had obviously done well under the treatment and which emitted a most offensive odour From the pus obtained from the wound two anaerobes were isolated in symbiosis one with round terminal spores in very small numbers, and the other a bacillus having a large subterminal oval spore The latter was present in large excess over the round sporing bacillus

The meat-broth tube in which the pus had been cultivated obviously contained a mixture, and as that tube showed evidence of active proteolysis and emitted the same powerful offensive odour as the wounds did, it was felt that the organism present in predominant numbers was responsible

After two attempts, made as already described by one of us (R D) in THE LANCET,[3] the oval sporing bacillus was obtained in apparently pure culture, and its morphological and cultural reactions worked out as described below

The oval sporing organism thus recovered, when introduced into a fresh meat broth tube and incubated at 37° C anaerobically, in two or three days emitted the characteristic wound odour, and the meat began to blacken and diminish in volume, indicating active proteolysis This at once suggested the possible rôle played by this bacillus in the case of wounds —viz, that under suitable conditions for active growth and proliferation it did in the dead wound tissues what it appeared to do *in vitro*—viz, it digested them

Looking at the organism from this point of view, we came to the conclusion that it was in reality the active and probably the sole agent concerned in the cleansing of wounds that did well, and that where it was absent the wound remained refractory to salt-pack treatment and acted as if an antiseptic were being used instead of salt As the organism, however, belonged to the same group as *B œdematis maligni* and *B tetani* it was still looked on with suspicion in view of the universal horror of the presence of anaerobic spore bearers in a wound, and the natural desire on the part of the surgeon to get rid of such with all possible haste

BACTERIOLOGICAL AND CLINICAL OBSERVATIONS ON THE ORGANISM

Experiments were undertaken by one of us (R D) from which the organism was found to be non pathogenic to the animals employed, and from which, further, it could be assumed that the culture medium in which the organism had been grown for varying periods of time apparently contained no elements toxic to those animals

Taking these facts into consideration, together with the fact that it was apparently present judging from the smell, and as a result of bacteriological investigation in all the cases which pursued a normal course, and where no harm seemed to come from it, it was felt by us that it would be legitimate actually to introduce the anaerobe in living culture into a wound which had previously been treated with salt pack but which had failed to smell or to improve Such a case presented itself, and after making cultures from the wound to determine the absence of the organism one of us (R D) introduced a living culture, while the other (L J) carried out his usual method of salt packing In three days' time the patient's temperature had come down, the wound was emitting a foul and characteristic odour, and the patient was comfortable In a day or two after removal of the salt pack the wound was absolutely clean, devoid of all sloughs, a brilliant scarlet colour like fresh beef, and was covered with healthy granulations This case was its own control It had previously been packed in the usual way with salt bags, it did not smell thereafter, the patient did not improve, and the particular anaerobe described below was absent in culture It was repacked with salt as before, with one added factor—viz, the introduction of the spore-bearer in question

With these facts before us we concluded that the organism which we had introduced was in all probability the vital factor in determining the success on the second occasion of packing Since then other cases have been encountered in which the salt bag did not alter the patient's condition for the better and which did not smell. These have been sown in the same way with the living culture after first making cultures from the wound to determine its absence from that wound before sowing The wound has then been repacked in the usual way and has invariably done well and afforded nasal proof of the active presence of the organism.

MODE OF ACTION OF SALT PACKS

The question then arose as to the rôle played by the salt, and we felt that possibly the tight packing with salt bags, together with the subsequent outflow of fluid and the collection of pus that accumulated in the packing, acted rather by reason of its rendering the wound more or less anaerobic than by any inherent virtue possessed by the salt, either as a germicide or in view of its supposed lymphagogic action To determine this point certain cases were chosen, sown with a living culture of the organism and bags containing nothing but an inert substance—viz, sphagnum moss—were introduced in the same way as the salt bags so as to lie in contact with every part of the wound and to fill up the cavity completely We felt that as pus and fluid accumulated the moss would swell out and so mould itself more closely to the form of the wound while at the same time all interstices would become filled with fluid. In this way we should render the wound more or less anaerobic, and so afford the most favourable conditions for the growth of the anaerobe At the same time the element of salt would be eliminated

As we anticipated, the cases so treated followed exactly the same course as those in which the organism had been sown, but where the usual salt bag had been used

Hence we come to the conclusion that salt is not necessary in the treatment of wounds, and where salt packs are employed they act more by rendering the wound anaerobic, so providing favourable conditions for the growth of the organism where that organism is present When the latter is already present it gets to work, and the case goes on to a satisfactory termination Where the organism is absent the salt pack, in spite of the salt and all its supposed lymphagogic action, is useless in cleaning the wound or improving the patient's condition We arrive therefore at a point where we can recommend the employment of a method of wound treatment which involves the simplest of technique, the simplest and cheapest of dressings for salt or sphagnum moss can easily be had, and the least disturbance to the patient It does away with the need for frequent dressing and the mental and physical suffering entailed thereby

In order to ensure this result however, it is necessary that the organism or its spores be present, and although it appears to be frequently present it cannot be depended on to be so Hence in such cases the wound ought to be sown with the organism at the time of packing

As it is a spore bearer and an anaerobe, supplies of it could easily be kept in small ampoules or glass capsules which could be broken over the wound, thus setting free the spores

Since coming to these conclusions, we have further investigated bacteriologically the flora of wounds that have done well and have smelt and we have invariably recovered this organism, as we have, of course, done in the cases which were sown of set purpose

It is true that we have had no acute cases of gas gangrene to treat in this series, although the wounds so treated have been large, filthy, and sloughy, and we cannot say

all who have adopted this method, that a powerful and most offensive odour was emitted from the salt-packed wound Girling Ball,[1] for example, to quote one, says that the "foul odour is not an indication for changing the plug" Others say that the odour is a signal for change of dressing No one attempts an explanation except in one paper[2] we have read where the view is expressed that it is due to a "decomposition in the dressings themselves" It was noted, however, by one of us (L J) in the course of clinical work that one or two of those cases which failed to improve were also devoid of this peculiarly offensive fœtid odour, and on recalling one or two previous cases that had not progressed satisfactorily it was remembered that they too were devoid of odour

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The oval sporing organism thus recovered, when introduced into a fresh meat broth tube and incubated at 37° C anaerobically, in two or three days emitted the characteristic wound odour, and the meat began to blacken and diminish in volume, indicating active proteolysis This at once suggested the possible rôle played by this bacillus in the case of wounds —viz, that under suitable conditions for active growth and proliferation it did in the dead wound tissues what it appeared to do *in vitro*—viz, it digested them

Looking at the organism from this point of view, we came to the conclusion that it was in reality the active and probably the sole agent concerned in the cleansing of wounds that did well, and that where it was absent the wound remained refractory to salt-pack treatment and acted as if an antiseptic were being used instead of salt As the organism, however belonged to the same group as *B œdematis maligni* and *B tetani* it was still looked on with suspicion in view of the universal horror of the presence of anaerobic spore bearers in a wound, and the natural desire on the part of the surgeon to get rid of such with all possible haste

BACTERIOLOGICAL AND CLINICAL OBSERVATIONS ON THE ORGANISM

Experiments were undertaken by one of us (R D) from which the organism was found to be non pathogenic to the animals employed, and from which, further, it could be assumed that the culture medium in which the organism had been grown for varying periods of time apparently contained no elements toxic to those animals

Taking these facts into consideration, together with the fact that it was apparently present judging from the smell, and as a result of bacteriological investigation in all the cases which pursued a normal course, and where no harm seemed to come from it, it was felt by us that it would be legitimate actually to introduce the anaerobe in living culture into a wound which had previously been treated with salt pack but which had failed to smell or to improve Such a case presented itself, and after making cultures from the wound to determine the absence of the organism one of us (R D) introduced a living culture, while the other (L J) carried out his usual method of salt packing In three days' time the patient's temperature had come down, the wound was emitting a foul and characteristic odour, and the patient was comfortable In a day or two after removal of the salt pack the wound was absolutely clean, devoid of all sloughs, a brilliant scarlet colour like fresh beef, and was covered with healthy granulations This case was its own control It had previously been packed in the usual way with salt bags, it did not smell thereafter, the patient did not improve, and the particular anaerobe described below was absent in culture It was repacked with salt as before, with one added factor—viz, the introduction of the spore-bearer in question

With these facts before us we concluded that the organism which we had introduced was in all probability the vital factor in determining the success on the second occasion of packing Since then other cases have been encountered in which the salt bag did not alter the patient's condition for the better and which did not smell. These have been sown in the same way with the living culture after first making cultures from the wound to determine its absence from that wound before sowing The wound has then been repacked in the usual way and has invariably done well and afforded nasal proof of the active presence of the organism

MODE OF ACTION OF SALT PACKS

The question then arose as to the rôle played by the salt, and we felt that possibly the tight packing with salt bags, together with the subsequent outflow of fluid and the collection of pus that accumulated in the packing, acted rather by reason of its rendering the wound more or less anaerobic than by any inherent virtue possessed by the salt, either as a germicide or in view of its supposed lymphagogic action To determine this point certain cases were chosen, sown with a living culture of the organism and bags containing nothing but an inert substance—viz, sphagnum moss—were introduced in the same way as the salt bags so as to lie in contact with every part of the wound and to fill up the cavity completely We felt that as pus and fluid accumulated the moss would swell out and so mould itself more closely to the form of the wound, while at the same time all interstices would become filled with fluid In this way we should render the wound more or less anaerobic, and so afford the most favourable conditions for the growth of the anaerobe At the same time the element of salt would be eliminated

As we anticipated, the cases so treated followed exactly the same course as those in which the organism had been sown, but where the usual salt bag had been used.

Hence we come to the conclusion that salt is not necessary in the treatment of wounds, and where salt packs are employed they act more by rendering the wound anaerobic, so providing favourable conditions for the growth of the organism where that organism is present When the latter is already present it gets to work, and the case goes on to a satisfactory termination Where the organism is absent the salt pack, in spite of the salt and all its supposed lymphagogic action, is useless in cleaning the wound or improving the patient's condition We arrive therefore at a point where we can recommend the employment of a method of wound treatment which involves the simplest of technique, the simplest and cheapest of dressings for salt or sphagnum moss can easily be had, and the least disturbance to the patient. It does away with the need for frequent dressing and the mental and physical suffering entailed thereby

In order to ensure this result however, it is necessary that the organism or its spores be present, and although it appears to be frequently present it cannot be depended on to be so Hence in such cases the wound ought to be sown with the organism at the time of packing

As it is a spore bearer and an anaerobe, supplies of it could easily be kept in small ampoules or glass capsules which could be broken over the wound, thus setting free the spores

Since coming to these conclusions, we have further investigated bacteriologically the flora of wounds that have done well and have smelt, and we have invariably recovered this organism, as we have, of course, done in the cases which were sown of set purpose

It is true that we have had no acute cases of gas gangrene to treat in this series, although the wounds so treated have been large, filthy, and sloughy, and we cannot say

from personal knowledge how it would act in such. We can, however, point to the published experience of several observers[4] who have used the salt-pack treatment with marked success in cases of gas infections from which *B perfringens* has been isolated This evidence leads us to believe that in acute cases of gas infection the presence of the organism we describe together with salt or sphagnum moss pack is likely to be attended with the same good result as in septic wounds showing no clinical evidence of gas infection We reach therefore a somewhat paradoxical conclusion—viz. that septic wounds can be successfully treated by sowing in them another spore-bearing anaerobe and thereafter rendering the wound more or less anaerobic. It certainly sounds like rank heresy and yet the evidence we adduce is too *strong to be* disregarded

IMPORTANCE OF DEAD TISSUE IN THE WOUND

Now it is common knowledge that the danger of a wound, apart from actual destruction by the inflicting trauma, is the *entry into* that wound of pathogenic organisms Since Lister s time the destruction of the invading germ has engrossed men's minds and by means of all kinds of antiseptics it has been sought to combat the infection Endeavour to achieve this end in this way has within the last two and a half years given way to attempts to fight the evil by using the patient s own protective forces—the so-called physiological method. The recognition that the body must take its part in the struggle and do the necessary work of repair is the merit of the advocates of saline The advantage, however does *not consist* in the action of saline as described by its originators and that the saline treatment of Wright has had to yield ground considerably since its *inception* is proved by the increasing frequency with which total excision of the wound is being resorted to

Throughout all these years of observation and work in wound infection the importance of the dead tissues present in the wound has been neglected or relegated to a secondary place

The view is now rapidly gaining ground that the dead tissue is the all important factor It is from this as a base that pathogenic organisms *elaborate the toxins* with which they gradually lower the patient s resistance and from which some of them make sundry excursions into the patient s body The toxins may either be specific toxins elaborated by the germs themselves or they may be formed as a result of the splitting up of the *dead tissue* by the vital action of these germs Destroy the base—the *submarine* base so to speak—from which these germs derive their supplies and the source of the undermining poison is cut off Antiseptics do not achieve this They may kill a few of the germs but even though they eradicate the infection it is not for a considerable time for their use implies *an added* trauma to the tissues The physiological method does not necessarily inflict a fresh trauma but leaves the body by its own forces to overcome the infection and to cast off the dead tissue

This takes time and as long as the basis of *supply* is left it is a perpetual source of danger Recognising this the tendency of surgery is now as we have indicated to remove the dead material by the knife—to excise the wound, in other words But the exact amount of dead material cannot always be appraised with the naked eye and moreover the very act of excision inflicts a fresh trauma liable to become immediately re infected Further, this is a gross and mutilating form of attack, and for anatomical reasons is not always possible A consideration of the histological features of gunshot wounds has led Bashford[5] practically to advocate immediate excision impressed as he is by the almost constant presence of anaerobic organisms in relation to the dead tissues Our whole knowledge of anaerobes however is imperfect and chaotic So many of them being practically saprophytes produce potent poisons as a result of their activity on dead tissue that all are indiscriminately condemned The organism which we describe here however is apparently one of the exceptions It is apparently non pathogenic does not produce toxins inimical to the human body and does not apparently attack living tissues At the same time however it appears to be able rapidly to break down dead tissue without in doing so producing toxics and this is proved amongst other things by the appearance of the shreds of slough remaining in the wound after removal of the salt bag These look thin almost transparent, and generally wash away easily under slight irrigation

This organism can dissect away the macroscopic and microscopic dead tissue in a way that no surgeon s knife ever can, and that without at the same time producing any further trauma The devitalised tissues are practically all removed in a few days, and with their destruction the breeding ground of the pathogenic germs is destroyed, while the living tissues, relieved of the strain of ever combating the increasing infection while trying to cast off the devitalised tissue, is able to turn its energies to repair, as evidenced by the rapid formation of healthy, strong granulations

DESCRIPTION OF METHOD OF TREATMENT

We should like to emphasise again the extreme importance of the presence of devitalised tissue in a wound , and no wound can be inflicted without a certain amount of devitalisation, whether microscopic or macroscopic

There are certain points, however, to which it is necessary to draw attention in the treatment of these wounds, and they are points which must be borne in mind

The most important and fundamental is the need *to lay* open a wound in the *most thorough manner* possible *It is* a point that is not always carried out, but it is *essential* Whether obviously dead tissue is cut away or not at the same time is, with the method of treatment we advocate, not absolutely necessary, but it is all important to lay open every pocket so that the packing will be in contact everywhere with the walls of the wound. As the *wounds are so* often irregular and burrowing, this will call for the ingenuity of the surgeon in each case All foreign bodies must likewise be removed and any grossly damaged tissue may at the same time be removed

The interior of the wound is now irrigated with sterile water or saline to wash away obvious pus or blood, and the living culture of the organism is now sown in the wound Hitherto we have used a pipette for the purpose Immediately thereafter the packs whether of salt or of sphagnum moss are introduced into the wound so as to come in contact with every part of it Just before introduction the packs are moistened with sterile water or saline Over this several layers of plain gauze are laid after slightly soaking in the same way The wound is thus completely and firmly packed and over all a thick layer *of* cotton wool, after which the whole is firmly bandaged It is an *additional help* to steady the limb by means of a splint The packing itself however acts as a splint as we shall see in the sequel Where salt has been used the patient has some slight pain for a few hours and whatever pack has been used the temperature will probably rise even *higher than* it was before interference with the wound

For the first 24 hours, if salt has been used, there is a very copious discharge of fluid doubtless due to the concentration of salt in the wound Thereafter the flow ceases presumably as a result of reduced salt concentration A certain amount of pus oozes away and towards *the end* of the second day or at latest the third day, the wound begins to smell in cases which have been unsown but where the organism has been *present* This corresponds more or less closely to what occurs *in vitro* A culture sown in meat broth from the sporing form does not begin to smell much till the end of the second or till the third day and probably means the length of time needed for the spores present to germinate sufficiently for the proliferating organism to attack the dead tissue in sufficient numbers to be able to cause the smell At the same time as has been noted by nearly all who have written on the salt bag treatment the temperature begins to come down towards the end of the second or third day and thereafter, as a rule stays down This seems to coincide with the *production* of the foul odour If in an unsown case where salt bags are used by the third or at latest the fourth day the temperature shows no signs *of* subsiding and the *wound does* not emit the offensive stench it is not doing well and is not going to do well under that treatment and it is a signal for the sowing of the wound with the living organism Where on the other hand the characteristic smell is markedly present and yet there is no fall in the temperature *look for* some other focus of infection or some other wound perhaps slight and consequently treated by one of the old antiseptics

From the third day onward the patient steadily improves There is no daily dressing to worry him, except perhaps the

all who have adopted this method, that a powerful and most offensive odour was emitted from the salt-packed wound Girling Ball,[1] for example, to quote one, says that the "foul odour is not an indication for changing the plug" Others say that the odour is a signal for change of dressing No one attempts an explanation except in one paper[2] we have read where the view is expressed that it is due to a "decomposition in the dressings themselves" It was noted, however, by one of us (L J) in the course of clinical work that one or two of those cases which failed to improve were also devoid of this peculiarly offensive fœtid odour, and on recalling one or two previous cases that had not progressed satisfactorily it was remembered that they too were devoid of odour

On considering together this phenomenon, and its possible explanation, we came to the conclusion that probably in the evil smelling but successful cases there was present a bacterium which was absent from those which did badly and which did not smell The idea was at first conceived that the salt pack might produce physical conditions in the wound which favoured the growth of this bacterium, and that the good results of the treatment might be directly due to its activity Taking everything into consideration, it was thought by one of us (R D) that the organism present was most likely to be an anaerobe, and steps were accordingly taken to determine the presence or absence of such an anaerobe or anaerobes A case was chosen from which the salt pack was about to be removed This case was one which had obviously done well under the treatment and which emitted a most offensive odour From the pus obtained from the wound two anaerobes were isolated in symbiosis one with round terminal spores in very small numbers, and the other a bacillus having a large subterminal oval spore The latter was present in large excess over the round sporing bacillus

The meat-broth tube in which the pus had been cultivated obviously contained a mixture, and as that tube showed evidence of active proteolysis and emitted the same powerful offensive odour as the wounds did, it was felt that the organism present in predominant numbers was responsible

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Looking at the organism from this point of view, we came to the conclusion that it was in reality the active and probably the sole agent concerned in the cleansing of wounds that did well, and that where it was absent the wound remained refractory to salt pack treatment and acted as if an antiseptic were being used instead of salt As the organism, however belonged to the same group as *B œdematis maligni* and *B tetani* it was still looked on with suspicion in view of the universal horror of the presence of anaerobic spore bearers in a wound, and the natural desire on the part of the surgeon to get rid of such with all possible haste

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Taking these facts into consideration, together with the fact that it was apparently present, judging from the smell, and as a result of bacteriological investigation in all the cases which pursued a normal course, and where no harm seemed to come from it, it was felt by us that it would be legitimate actually to introduce the anaerobe in living culture into a wound which had previously been treated with salt pack but which had failed to smell or to improve Such a case presented itself, and after making cultures from the wound to determine the absence of the organism one of us (R D) introduced a living culture, while the other (L J) carried out his usual method of salt packing In three days' time the patient's temperature had come down, the wound was emitting a foul and characteristic odour, and the patient was comfortable In a day or two after removal of the salt pack the wound was absolutely clean, devoid of all sloughs, a brilliant scarlet colour like fresh beef, and was covered with healthy granulations This case was its own control It had previously been packed in the usual way with salt bags, it did not smell thereafter, the patient did not improve, and the particular anaerobe described below was absent in culture It was repacked with salt as before, with one added factor—viz, the introduction of the spore-bearer in question

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MODE OF ACTION OF SALT PACKS

The question then arose as to the rôle played by the salt, and we felt that possibly the tight packing with salt bags, together with the subsequent outflow of fluid and the collection of pus that accumulated in the packing, acted rather by reason of its rendering the wound more or less anaerobic than by any inherent virtue possessed by the salt, either as a germicide or in view of its supposed lymphagogic action To determine this point certain cases were chosen, sown with a living culture of the organism and bags containing nothing but an inert substance—viz, sphagnum moss—were introduced in the same way as the salt bags so as to lie in contact with every part of the wound and to fill up the cavity completely We felt that as pus and fluid accumulated the moss would swell out and so mould itself more closely to the form of the wound, while at the same time all interstices would become filled with fluid In this way we should render the wound more or less anaerobic, and so afford the most favourable conditions for the growth of the anaerobe At the same time the element of salt would be eliminated

As we anticipated, the cases so treated followed exactly the same course as those in which the organism had been sown, but where the usual salt bag had been used.

Hence we come to the conclusion that salt is not necessary in the treatment of wounds, and where salt packs are employed they act more by rendering the wound anaerobic, so providing favourable conditions for the growth of the organism where that organism is present When the latter is already present it gets to work, and the case goes on to a satisfactory termination Where the organism is absent the salt pack, in spite of the salt and all its supposed lymphagogic action, is useless in cleaning the wound or improving the patient's condition We arrive therefore at a point where we can recommend the employment of a method of wound treatment which involves the simplest of technique, the simplest and cheapest of dressings for salt or sphagnum moss can easily be had, and the least disturbance to the patient. It does away with the need for frequent dressing and the mental and physical suffering entailed thereby

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Importance of Dead Tissue in the Wound

Now it is common knowledge that the danger of a wound, apart from actual destruction by the inflicting trauma, is the entry into that wound of pathogenic organisms Since Lister's time the destruction of the invading germ has engrossed men's minds, and by means of all kinds of antiseptics it has been sought to combat the infection Endeavour to achieve this end in this way has within the last two and a half years given way to attempts to fight the evil by using the patient's own protective forces—the so called physiological method The recognition that the body *must take its part* in the struggle and do the necessary work of repair is the merit of the advocates of saline The advantage, however, does not consist in the action of saline as described by its originators, and that the saline treatment of Wright has had to yield ground considerably since its inception is proved by the increasing frequency with which *total excision* of the wound is being resorted to

Throughout all these years of observation and work in wound infection the importance of the dead tissues present in the wound has been neglected or relegated to a secondary place

The view is now rapidly gaining ground that the dead tissue is the all important factor It is from this as a base that pathogenic organisms elaborate the toxins with which they gradually lower the patient's resistance and from which some of them make sundry excursions into the patient's body The toxins may either be specific toxins elaborated by the germs themselves or they may be formed as a result of the splitting up of the dead tissue by the vital action of these germs Destroy the base—the submarine base so to speak—from which these germs derive their supplies and the source of the undermining poison is cut off Antiseptics do not achieve this They may kill a few of the germs but even though they eradicate the infection it is not for a considerable time, for their use implies an added trauma to the tissues The physiological method does not necessarily inflict a fresh trauma but leaves the body by its own forces to overcome the infection and to cast off the dead tissue

This takes time and as long as the basis of supply is left it is a perpetual source of danger Recognising this, the tendency of surgery is now as we have indicated, to remove the dead material by the knife—to excise the wound, in other words But the exact amount of dead material cannot always be appraised with the naked eye and moreover the very act of excision inflicts a fresh trauma liable to become immediately re infected Further, this is a gross and mutilating form of attack, and for anatomical reasons is not always possible A consideration of the histological features of gunshot wounds has led Bashford[5] practically to advocate immediate excision impressed as he is by the almost constant presence of anaerobic organisms in relation to the dead tissues Our whole knowledge of anaerobes however is imperfect and chaotic So many of them being practically saprophytes produce potent poisons as a result of their activity on dead tissue that all are indiscriminately condemned The organism which we describe here however is apparently one of the exceptions It is apparently non pathogenic does not produce toxins inimical to the human body and does not apparently attack living tissues At the same time, however it appears to be able rapidly to break down dead tissue without in doing so producing toxins and this is proved amongst other things by the appearance of the shreds of slough remaining in the wound after removal of the salt bag These look thin, almost transparent, and generally wash away easily under slight irrigation

This organism can dissect away the macroscopic and microscopic dead tissue in a way that no surgeon's knife ever can, and that without at the same time producing any further trauma The devitalised tissues are practically all removed in a few days, and with their destruction the breeding ground of the pathogenic germs is destroyed, while the living tissues, relieved of the strain of ever combating the increasing infection while trying to cast off the devitalised tissue, is able to turn its energies to repair, as evidenced by the rapid formation of healthy, strong granulations

Description of Method of Treatment

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There are certain points, however, to which it is necessary to draw attention in the treatment of these wounds, and they are points which must be borne in mind

The most important and fundamental is the need to lay open a wound in the most thorough manner possible It is a point that is not always carried out, but it is essential Whether obviously dead tissue is cut away or not at the same time is, with the method of treatment we advocate, not absolutely necessary, but it is all important to lay open *every pocket so that* the packing will be in contact everywhere with the walls of the wound. As the wounds are so often irregular and burrowing, this will call for the ingenuity of the surgeon in each case All foreign bodies must likewise be removed, and any grossly damaged tissue may at the same time be removed

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Taking these facts into consideration, together with the fact that it was apparently present, judging from the smell, and as a result of bacteriological investigation in all the cases which pursued a normal course, and where no harm seemed to come from it, it was felt by us that it would be legitimate actually to introduce the anaerobe in living culture into a wound which had previously been treated with salt pack but which had failed to smell or to improve Such a case presented itself, and after making cultures from the wound to determine the absence of the organism one of us (R D) introduced a living culture, while the other (L J) carried out his usual method of salt packing In three days' time the patient's temperature had come down, the wound was *emitting* a foul and characteristic odour, and the patient was comfortable In a day or two after removal of the salt pack the wound was absolutely clean, devoid of all sloughs, a brilliant scarlet colour like fresh beef, and was covered with healthy granulations This case was its own control. It had previously been packed in the usual way with salt bags, it did not smell thereafter, the patient did not improve, and the particular anaerobe described below was absent in culture It was repacked with salt as before, with one added factor—viz, the introduction of the spore-bearer in question

With these facts before us we concluded that the organism which we had introduced was in all probability the vital factor in determining the success on the second occasion of packing Since then other cases have been encountered in which the salt bag did not alter the patient's condition for the better and which did not smell These have been sown in the same way with the living culture after first making cultures from the wound to determine its absence from that wound before sowing The wound has then been repacked in the usual way and has invariably done well and afforded nasal proof of the active presence of the organism

MODE OF ACTION OF SALT PACKS

The question then arose as to the rôle played by the salt, and we felt that possibly the tight packing with salt bags, together with the subsequent outflow of fluid and the collection of pus that accumulated in the packing, acted rather by reason of its rendering the wound more or less anaerobic than by any inherent virtue possessed by the salt, either as a germicide or in view of its supposed lymphagogic action To determine this point certain cases were chosen, sown with a living culture of the organism and bags containing nothing but an inert substance—viz, sphagnum moss—were introduced in the same way as the salt bags so as to lie in contact with every part of the wound and to fill up the cavity completely We felt that as pus and fluid accumulated the moss would swell out and so mould itself more closely to the form of the wound, while at the same time all interstices would become filled with fluid In this way we should render the wound more or less anaerobic, and so afford the most favourable conditions for the growth of the anaerobe At the same time the element of salt would be eliminated

As we anticipated, the cases so treated followed exactly the same course as those in which the organism had been sown, but where the usual salt bag had been used.

Hence we come to the conclusion that salt is not necessary in the treatment of wounds, and where salt packs are employed they act more by rendering the wound anaerobic, so providing favourable conditions for the growth of the organism where that organism is present When the latter is already present it gets to work, and the case goes on to a satisfactory termination Where the organism is absent the salt pack, in spite of the salt and all its supposed lymphagogic action, is useless in cleaning the wound or improving the patient's condition We arrive therefore at a point where we can recommend the employment of a method of wound treatment which involves the simplest of technique, the simplest and cheapest of dressings for salt or sphagnum moss can easily be had, and the least disturbance to the patient. It does away with the need for frequent dressing and the mental and physical suffering entailed thereby

In order to ensure this result however, it is necessary that the organism or its spores be present, and although it appears to be frequently present it cannot be depended on to be so Hence in such cases the wound ought to be sown with the organism at the time of packing

As it is a spore bearer and an anaerobe, supplies of it could easily be kept in small ampoules or glass capsules which could be broken over the wound, thus setting free the spores

Since coming to these conclusions, we have further investigated bacteriologically the flora of wounds that have done well and have smelt and we have invariably recovered this organism, as we have, of course, done in the cases which were sown of set purpose

It is true that we have had no acute cases of gas gangrene to treat in this series, although the wounds so treated have been large, filthy, and sloughy, and we cannot say

from personal knowledge how it would act in such. We can, however, point to the published experience of several observers[1] who have used the salt-pack treatment with marked success in cases of gas infections from which *B perfringens* has been isolated This evidence leads us to believe that in acute cases of gas infection the presence of the organism we describe together with salt or sphagnum moss pack is likely to be attended with the same good result as in septic wounds showing no clinical evidence of gas infection We reach therefore a somewhat paradoxical conclusion—viz. that septic wounds can be successfully treated by sowing in them another spore-bearing anaerobe and thereafter rendering the wound more or less anaerobic It certainly sounds like rank heresy and yet the evidence we adduce is too strong to be disregarded.

IMPORTANCE OF DEAD TISSUE IN THE WOUND

Now it is common knowledge that the danger of a wound, apart from actual destruction by the inflicting trauma, is the entry into that wound of pathogenic organisms Since Lister's time the destruction of the invading germ has engrossed men's minds, and by means of all kinds of antiseptics it has been sought to combat the infection Endeavour to achieve this end in this way has within the last two and a half years given way to attempts to fight the evil by using the patient's own protective forces—the so-called physiological method. The recognition that the body must take its part in the struggle and do the necessary work of repair is the merit of the advocates of saline The advantage, however does not consist in the action of saline as described by its originators and that the saline treatment of Wright has had to yield ground considerably since its inception is proved by the increasing frequency with which total excision of the wound is being resorted to

Throughout all these years of observation and work in wound infection the importance of the dead tissues present in the wound has been neglected or relegated to a secondary place

The view is now rapidly gaining ground that the dead tissue is the all important factor It is *from this as a base* that pathogenic organisms elaborate the toxins with which they gradually lower the patient's resistance and from which some of them make sundry excursions into the patient's body The toxins may either be specific toxins elaborated by the germs themselves *or they may be formed as* a result of the splitting up of the dead tissue *by the vital* action of these germs Destroy the base—the submarine base *so to* speak—from which these germs derive their supplies and the source of the undermining poison is cut off Antiseptics do not achieve this *They may kill a few of the* germs but even though they eradicate the infection it is not for a considerable time for their use implies an added *trauma to the tissues* The physiological method does not necessarily inflict a fresh trauma but leaves the body by its own force to overcome the infection and to cast off the dead tissue

This takes time and as long as the basis of *supply* is left it is a perpetual source of danger Recognising this the tendency of surgery is now as we have indicated to remove the dead material *by the knife*—to excise the wound in other words But the exact amount of dead material cannot always be appraised with the naked eye and moreover the very act of excision inflicts a fresh trauma liable to become immediately re infected Further this is a gross and mutilating form of attack and for anatomical reasons is not always possible A consideration of the histological features of gunshot wounds has led Bashford practically to advocate immediate excision impressed as he is by the almost constant presence of anaerobic organisms in relation to the dead tissues Our whole knowledge of anaerobes however is imperfect and chaotic. So many of them being practically saprophytes produce potent poisons as a result of their activity on dead tissue that all are indiscriminately condemned The organism which we describe here however is apparently one of the exceptions It is apparently non pathogenic does not produce toxins inimical to the human body and does not apparently attack living tissues At the same time however it appears to be able rapidly to break down dead tissue without in doing so producing toxins and this is proved amongst other things by the appearance of the shreds of slough remaining in the wound after removal of the salt bag These look thin almost transparent, and generally wash away easily under *slight irrigation*

This organism can dissect away the macroscopic and microscopic dead tissue in a way that no surgeon's knife ever can, and that without at the same time producing any further trauma The devitalised tissues are practically all removed in a few days and with their destruction the breeding ground of the pathogenic germs is destroyed while the living tissues relieved of the strain of ever combating the increasing infection while trying to cast off the devitalised tissue, is able to turn its energies to repair, as evidenced by the rapid formation of healthy, strong granulations

DESCRIPTION OF METHOD OF TREATMENT

We should like to emphasise again the extreme importance of the presence of devitalised tissue in a wound, and no wound can be inflicted without a certain amount of devitalisation, whether microscopic or macroscopic

There are certain points, however to which it is necessary to draw attention in the treatment of these wounds, and they are points which must be borne in mind

The most important and fundamental is the need to lay open a wound in the most thorough manner possible It is a point that is not always carried out, but it is essential Whether obviously dead tissue is cut away or not at the same time is, with the method of treatment we advocate, not absolutely necessary but it is all important to lay open every pocket so that the packing will be in contact everywhere with the walls of the wound. As the wounds are so often irregular and burrowing, this will call for the ingenuity of the surgeon in each case All foreign bodies must likewise be removed and any grossly damaged tissue may at the same time be removed

The interior of the wound is now irrigated with sterile water or saline to wash away obvious pus or blood, and the living culture of the organism is now sown in the wound Hitherto we have used a pipette for the purpose Immediately thereafter the packs whether of salt or of sphagnum moss are introduced into the wound so as to come in contact with every part of it Just before introduction the packs are moistened with sterile water or saline Over this several layers of plain gauze are laid after slightly soaking in the same way The wound is thus completely and firmly packed and over-all a thick layer of cotton wool after which the whole is firmly bandaged It is an additional help to steady the limb by means of a splint The packing itself however acts as a splint as we shall see in the sequel Where salt has been used the patient has some slight pain for a few hours and whatever pack has been used the temperature will probably rise even higher than it was before interference with the wound

For the first 24 hours if salt has been used, there is a very copious discharge of fluid doubtless due to the concentration of salt in the wound Thereafter the flow ceases presumably as a result of reduced salt concentration A certain amount of pus oozes away and towards the end of the second day or at latest the third day, the wound begins to smell in cases which have been unsown but where the organism has been present This corresponds more or less closely to what occurs *in vitro* A culture sown in meat broth from the sporing form does not begin to smell much till the end of the second or till the third day, and probably means the length of time needed for the *spores present* to germinate sufficiently for the proliferating organism to attack the dead tissue in sufficient numbers to be able to cause the smell At the same time, as has been noted by nearly all who have written on the salt bag treatment the temperature begins to come down towards the end of the second or third day and thereafter as a rule stays down This seems to coincide with the production of the foul odour If in an unsown case where salt bags are used by the third or at latest the fourth day *the temperature* shows no signs of subsiding and the wound does not emit the offensive stench it is not doing well and is not going to do well under that treatment and it is a signal for the sowing of the wound with the living organism Where on the other hand the characteristic smell is markedly present and yet there is no fall in the temperature look for some other *focus* of infection or some other wound perhaps slight, and consequently treated by *one of* the old antiseptics

From the third *day* onward the patient steadily improves There is no daily *dressing* to worry him, except perhaps the

all who have adopted this method, that a powerful and most offensive odour was emitted from the salt-packed wound Girling Ball,[1] for example, to quote one, says that the "foul odour is not an indication for changing the plug" Others say that the odour is a signal for change of dressing No one attempts an explanation except in one paper[2] we have read where the view is expressed that it is due to a "decomposition in the dressings themselves" It was noted, however, by one of us (L J) in the course of clinical work that one or two of those cases which failed to improve were also devoid of this peculiarly offensive fœtid odour, and on recalling one or two previous cases that had not progressed satisfactorily it was remembered that they too were devoid of odour

On considering together this phenomenon, and its possible explanation, we came to the conclusion that probably in the evil smelling but successful cases there was present a bacterium which was absent from those which did badly and which did not smell The idea was at first conceived that the salt pack might produce physical conditions in the wound which favoured the growth of this bacterium, and that the good results of the treatment might be directly due to its activity Taking everything into consideration, it was thought by one of us (R D) that the organism present was most likely to be an anaerobe, and steps were accordingly taken to determine the presence or absence of such an anaerobe or anaerobes A case was chosen from which the salt pack was about to be removed This case was one which had obviously done well under the treatment and which emitted a most offensive odour From the pus obtained from the wound two anaerobes were isolated in symbiosis one with round terminal spores in very small numbers, and the other a bacillus having a large subterminal oval spore The latter was present in large excess over the round sporing bacillus

The meat-broth tube in which the pus had been cultivated obviously contained a mixture, and as that tube showed evidence of active proteolysis and emitted the same powerful offensive odour as the wounds did, it was felt that the organism present in predominant numbers was responsible

After two attempts, made as already described by one of us (R D) in THE LANCET,[3] the oval sporing bacillus was obtained in apparently pure culture, and its morphological and cultural reactions worked out as described below

The oval sporing organism thus recovered, when introduced into a fresh meat broth tube and incubated at 37° C anaerobically, in two or three days emitted the characteristic wound odour, and the meat began to blacken and diminish in volume, indicating active proteolysis This at once suggested the possible rôle played by this bacillus in the case of wounds —viz, that under suitable conditions for active growth and proliferation it did in the dead wound tissues what it appeared to do *in vitro*—viz, it digested them

Looking at the organism from this point of view, we came to the conclusion that it was in reality the active and probably the sole agent concerned in the cleansing of wounds that did well, and that where it was absent the wound remained refractory to salt-pack treatment and acted as if an antiseptic were being used instead of salt As the organism, however belonged to the same group as *B œdematis maligni* and *B tetani* it was still looked on with suspicion in view of the universal horror of the presence of anaerobic spore bearers in a wound, and the natural desire on the part of the surgeon to get rid of such with all possible haste

BACTERIOLOGICAL AND CLINICAL OBSERVATIONS ON THE ORGANISM

Experiments were undertaken by one of us (R D) from which the organism was found to be non pathogenic to the animals employed, and from which, further, it could be assumed that the culture medium in which the organism had been grown for varying periods of time apparently contained no elements toxic to those animals

Taking these facts into consideration, together with the fact that it was apparently present, judging from the smell, and as a result of bacteriological investigation in all the cases which pursued a normal course, and where no harm seemed to come from it, it was felt by us that it would be legitimate actually to introduce the anaerobe in living culture into a wound which had previously been treated with salt pack but which had failed to smell or to improve Such a case presented itself, and after making cultures from the wound to determine the absence of the organism one of us (R D) introduced a living culture, while the other (L J) carried out his usual method of salt packing In three days' time the patient's temperature had come down, the wound was emitting a foul and characteristic odour, and the patient was comfortable In a day or two after removal of the salt pack the wound was absolutely clean, devoid of all sloughs, a brilliant scarlet colour like fresh beef, and was covered with healthy granulations This case was its own control It had previously been packed in the usual way with salt bags, it did not smell thereafter, the patient did not improve, and the particular anaerobe described below was absent in culture It was repacked with salt as before, with one added factor—viz, the introduction of the spore-bearer in question

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As we anticipated, the cases so treated followed exactly the same course as those in which the organism had been sown, but where the usual salt bag had been used

Hence we come to the conclusion that salt is not necessary in the treatment of wounds, and where salt packs are employed they act more by rendering the wound anaerobic, so providing favourable conditions for the growth of the organism where that organism is present When the latter is already present it gets to work, and the case goes on to a satisfactory termination Where the organism is absent the salt pack, in spite of the salt and all its supposed lymphagogic action, is useless in cleaning the wound or improving the patient's condition We arrive therefore at a point where we can recommend the employment of a method of wound treatment which involves the simplest of technique, the simplest and cheapest of dressings, for salt or sphagnum moss can easily be had, and the least disturbance to the patient. It does away with the need for frequent dressing and the mental and physical suffering entailed thereby

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Throughout all these years of observation and work in wound infection the importance of the dead tissues present in the wound has been neglected or relegated to a secondary place

The view is now rapidly gaining ground that the dead tissue is the all important factor It is from this as a base that pathogenic organisms elaborate the toxins with which they gradually lower the patient's resistance and from which some of them make sundry excursions into the patient's body The toxins may either be *specific toxins* elaborated by the germs themselves or they may be formed as a *result* of the splitting up of the dead tissue by the vital action of these germs Destroy the base—the submarine base so to speak—from which these germs derive their supplies and the source of the undermining poison is cut off Antiseptics do not achieve this They may kill a few of the germs but even though they eradicate the infection it is not for a considerable time for their use implies an added trauma to the tissues The physiological method does not necessarily inflict a fresh trauma but leaves the body by its own forces to overcome the infection and to cast off the dead tissue

This takes time and as long as the basis of supply is left it is a perpetual source of danger Recognising this the tendency of surgery is now as we have indicated to remove the dead material by the knife—to excise the wound in other words But the exact amount of dead material cannot always be appreciated with the naked eye and moreover the very act of excision inflicts a fresh trauma liable to become immediately re infected Further this is a gross and mutilating form of attack, and *for* anatomical reasons is not always possible A consideration of the histological features of gunshot wounds has led Bashford practically to advocate immediate excision impressed as he is by the almost constant presence of anaerobic organisms in relation to the dead tissues Our whole knowledge of anaerobes however is imperfect and chaotic So many of them being practically saprophytes produce potent poisons as a result of their activity on dead tissue that all are indiscriminately condemned The organism which we describe here however is apparently one of the exceptions It is apparently non pathogenic does not produce toxins inimical to the human body and does not apparently attack living tissues At the same time however it appears to be able rapidly to break down dead tissue without in doing so producing toxins and this is proved amongst other things by the appearance of the shreds of slough remaining in the wound after removal of the salt bag These look thin almost transparent, and generally wash away easily under slight irrigation

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With these facts before us we concluded that the organism which we had introduced was in all probability the vital factor in determining the success on the second occasion of packing Since then other cases have been encountered in which the salt bag did not alter the patient's condition for the better and which did not smell. These have been sown in the same way with the living culture after first making cultures from the wound to determine its absence from that wound before sowing The wound has then been repacked in the usual way and has invariably done well and afforded nasal proof of the active presence of the organism

MODE OF ACTION OF SALT PACKS

The question then arose as to the rôle played by the salt, and we felt that possibly the tight packing with salt bags, together with the subsequent outflow of fluid and the collection of pus that accumulated in the packing, acted rather by reason of its rendering the wound more or less anaerobic than by any inherent virtue possessed by the salt, either as a germicide or in view of its supposed lymphagogic action To determine this point certain cases were chosen, sown with a living culture of the organism and bags containing nothing but an inert substance—viz , sphagnum moss—were introduced in the same way as the salt bags so as to lie in contact with every part of the wound and to fill up the cavity completely We felt that as pus and fluid accumulated the moss would swell out and so mould itself more closely to the form of the wound, while at the same time all interstices would become filled with fluid In this way we should render the wound more or less anaerobic, and so afford the most favourable conditions for the growth of the anaerobe At the same time the element of salt would be eliminated

As we anticipated, the cases so treated followed exactly the same course as those in which the organism had been sown, but where the usual salt bag had been used

Hence we come to the conclusion that salt is not necessary in the treatment of wounds, and where salt packs are employed they act more by rendering the wound anaerobic, so providing favourable conditions for the growth of the organism where that organism is present When the latter is already present it gets to work, and the case goes on to a satisfactory termination Where the organism is absent the salt pack, in spite of the salt and all its supposed lymphagogic action, is useless in cleaning the wound or improving the patient's condition We arrive therefore at a point where we can recommend the employment of a method of wound treatment which involves the simplest of technique, the simplest and cheapest of dressings for salt or sphagnum moss can easily be had, and the least disturbance to the patient. It does away with the need for frequent dressing and the mental and physical suffering entailed thereby

In order to ensure this result however, it is necessary that the organism or its spores be present, and although it appears to be frequently present it cannot be depended on to be so Hence in such cases the wound ought to be sown with the organism at the time of packing

As it is a spore bearer and an anaerobe, supplies of it could easily be kept in small ampoules or glass capsules which could be broken over the wound, thus setting free the spores

Since coming to these conclusions, we have further investigated bacteriologically the flora of wounds that have done well and have smelt and we have invariably recovered this organism, as we have, of course, done in the cases which were sown of set purpose

It is true that we have had no acute cases of gas gangrene to treat in this series, although the wounds so treated have been large, filthy, and sloughy, and we cannot say

from personal knowledge how it would act in such. We can however, point to the published experience of several observers[4] who have used the salt-pack treatment with marked success in cases of gas infections from which *B perfringens* has been isolated This evidence leads us to believe that in acute cases of gas infection the presence of the organism we describe together with salt or sphagnum moss pack is likely to be attended with the same good result as in septic wounds showing no clinical evidence of gas infection We reach therefore, a somewhat paradoxical conclusion—viz. that septic wounds can be successfully treated by sowing in them another spore bearing anaerobe and thereafter rendering the wound more or less anaerobic It certainly sounds like rank heresy and yet the evidence we adduce is too strong to be disregarded

IMPORTANCE OF DEAD TISSUE IN THE WOUND

Now it is common knowledge that the danger of a wound, apart from actual destruction by the inflicting trauma, is the entry into that wound of pathogenic organisms Since Lister's time the destruction of the invading germ has engrossed men's minds, and by means of all kinds of antiseptics it has been sought to combat the infection Endeavour to achieve this end in this way has within the last two and a half years given way to attempts to fight the evil by using the patient's own protective forces—the so-called physiological method. The recognition that the body must take its part in the struggle and do the necessary work of repair is the merit of the advocates of saline The advantage however, does not consist in the action of saline as described by its originators, and that the saline treatment of Wright has had to yield ground considerably since its inception is proved by the increasing frequency with which total excision of the wound is being resorted to

Throughout all these years of observation and work in wound infection the importance of the dead tissues present in the wound has been neglected or relegated to a secondary place

The view is now rapidly gaining ground that the dead tissue is the all important factor It is from this as a base that pathogenic organisms elaborate the toxins with which they gradually lower the patient's resistance and from which some of them make sundry excursions into the patient's body The toxins may either be specific toxins elaborated by the germs themselves or they may be formed as a result of the splitting up of the dead tissue by the vital action of these germs Destroy the base—the submarine base so to speak—from which these germs derive their supplies and the source of the undermining poison is cut off. Antiseptics do not achieve this They may kill a few of the germs but even though they eradicate the infection it is not for a considerable time for their use implies an added trauma to the tissues The physiological method does not necessarily inflict a fresh trauma but leaves the body by its own forces to overcome the infection and to cast off the dead tissue

This takes time and as long as the basis of supply is left it is a perpetual source of danger Recognising this the tendency of surgery is now as we have indicated to remove the dead material by the knife—to excise the wound in other words But the exact amount of dead material cannot always be appraised with the naked eye and moreover the very act of excision inflicts a fresh trauma liable to become immediately re infected Further this is a gross and mutilating form of attack, and for anatomical reasons is not always possible A consideration of the pathological features of gunshot wounds has led Bashford practically to advocate immediate excision impressed as he is by the almost constant presence of anaerobic organisms in relation to the dead tissues Our whole knowledge of anaerobes however is imperfect and chaotic So many of them being practically saprophytes produce potent poisons as a result of their activity on dead tissue that all are indiscriminately condemned The organism which we describe here however is apparently one of the exceptions It is apparently non pathogenic does not produce toxins inimical to the human body and does not apparently attack living tissues At the same time however it appears to be able rapidly to break down dead tissue without in doing so producing toxins and this is proved amongst other things by the appearance of the shreds of slough remaining in the wound after removal of the salt bag These look thin, almost transparent, and generally wash away easily under slight irrigation

This organism can dissect away the macroscopic and microscopic dead tissue in a way that no surgeon's knife ever can, and that without at the same time producing any further trauma The devitalised tissues are practically all removed in a few days and with their destruction the breeding ground of the pathogenic germs is destroyed, while the living tissues relieved of the strain of ever combating the increasing infection while trying to cast off the devitalised tissue, is able to turn its energies to repair, as evidenced by the rapid formation of healthy, strong granulations

DESCRIPTION OF METHOD OF TREATMENT

We should like to emphasise again the extreme importance of the presence of devitalised tissue in a wound, and no wound can be inflicted without a certain amount of devitalisation whether microscopic or macroscopic

There are certain points, however to which it is necessary to draw attention in the treatment of these wounds, and they are points which must be borne in mind

The most important and fundamental is the need to lay open a wound in the most thorough manner possible It is a point that is not always carried out, but it is essential Whether obviously dead tissue is cut away or not at the same time is, with the method of treatment we advocate, not absolutely necessary, but it is all important to lay open every pocket so that the packing will be in contact everywhere with the walls of the wound As the wounds are so often irregular and burrowing, this will call for the ingenuity of the surgeon in each case All foreign bodies must likewise be removed and any grossly damaged tissue may at the same time be removed

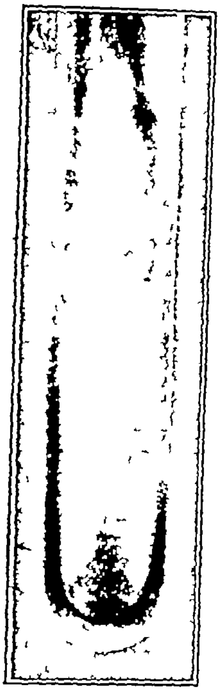
The interior of the wound is now irrigated with sterile water or saline to wash away obvious pus or blood, and the living culture of the organism is now sown in the wound Hitherto we have used a pipette for the purpose Immediately thereafter the packs, whether of salt or of sphagnum moss are introduced into the wound so as to come in contact with every part of it Just before introduction the packs are moistened with sterile water or saline Over this several layers of plain gauze are laid after slightly soaking in the same way The wound is thus completely and firmly packed and over-all a thick layer of cotton wool, after which the whole is firmly bandaged It is an additional help to steady the limb by means of a splint The packing itself however acts as a splint as we shall see in the sequel Where salt has been used the patient has some slight pain for a few hours and whatever pack has been used the temperature will probably rise even higher than it was before interference with the wound

For the first 24 hours if salt has been used, there is a very copious discharge of fluid doubtless due to the concentration of salt in the wound Thereafter the flow ceases presumably as a result of reduced salt concentration A certain amount of pus oozes away and towards the end of the second day or at latest the third day, the wound begins to smell in cases which have been unsown but where the organism has been present This corresponds more or less closely to what occurs *in vitro* A culture sown in meat broth from the sporing form does not begin to smell much till the end of the second or till the third day, and probably means the length of time needed for the spores present to germinate sufficiently for the proliferating organism to attack the dead tissue in sufficient numbers to be able to cause the smell At the same time, as has been noted by nearly all who have written on the salt-bag treatment the temperature begins to come down towards the end of the second or third day and thereafter as a rule stays down This seems to coincide with the production of the foul odour If in an unsown case where salt bags are used, by the third or at latest the fourth day the temperature shows no signs of subsiding and the wound does not emit the offensive stench it is not doing well and is not going to do well under that treatment and it is a signal for the sowing of the wound with the living organism Where on the other hand the characteristic smell is markedly present and yet there is no fall in the temperature look for some other focus of infection or some other wound perhaps slight and consequently treated by one of the old antiseptics

From the third day onward the patient steadily improves There is no daily dressing to worry him, except perhaps the

laying on of a fresh pad of cotton wool, he has no pain, and is able to eat and sleep well There is only one objectionable feature—viz., the foul odour, and that is the signal that all is going well The temperature is said, by most observers, to be no criterion so long as the pulse and the patient s general condition is good The temperature, however, is a valuable guide taken in conjunction with the presence or absence of odour

FIG 1



Agar slope culture some days old

Next comes the question of how long the pack is to be left in Further observation on this point is necessary, but probably seven days at least, although it will probably vary with the type of wound The packing is removed without an anæsthetic as a rule When one goes to remove it, the superficial part of the packing will be found more or less firmly adherent to the skin, and set hard like a board Exactly how this happens we do not propose to discuss here Suffice it to say that it has been observed by all who have written about this method

After detaching the board like upper dressing from the skin, the rest of the pack comes out easily and *en masse* bathed, as a rule, in bright-yellow pus, from which we can recover the organism

A few *more or less delicate* sloughs may still remain adherent, but on irrigating, they either become detached at once or do so a day or two later As the fluid pours over the surface they wave about like little fragments of transparent seaweed The fluid used is either warm normal saline or eusol The rest of the surface will be seen to be red and clean After 24 hours more, during which time plain gauze wrung out of saline has been placed in the wound, the exposed muscle will be a brilliant red, devoid of sloughs, and covered by firm, healthy granulations which bleed easily if touched All œdema has disappeared from the neighbourhood

DISCUSSION OF SOME POINTS OF INTEREST

Such a wound rapidly heals, can be skin grafted and brought together In any case, it has been noticed that such wounds result in a beautiful firm and more or less linear scar One other point remains to be mentioned—viz, that in no case where we have used salt bags has secondary hæmorrhage occurred This also coincides with the recorded observations of others Major A J Hull,[6] R A M O for instance, states that in his hands the salt-bag treatment has been one of the most generally applicable of procedures for the treatment of secondary hæmorrhage This, of course, is in direct opposition to the expressed statement of Sir Almroth Wright who says that the aim and object must be to prevent any digestive action in the neighbourhood of the endangered artery

Another point of interest is the appearance of sequestra. These appear, so far as our observation goes, to come away more rapidly than in cases not so treated and when they do come away they are white and clean and devoid of all soft tissue Further, where from anatomical reasons it is necessary to carry out manipulative procedure for the removal of the sequestra it has been observed that there is no post-operative flare up as there is in cases which have been treated *otherwise* Doubtless this is due to the fact that in the former case all the dead soft tissues have been thoroughly proteolysed, and the breeding ground in the bone for lurking pathogenic germs has been destroyed, whereas in the latter they are both present, and even slight manipulation *causes* a reinoculation of the patient and a consequent flare up

There are many other points which space forbids us to discuss, points observed and raised by others who have used used salt bags, but a consideration of the facts we put forward in this paper will probably explain away some of their difficulties, and we venture to hope furnish a true rationale of this simple method of treatment.

We propose, in the meantime, to christen the organis the Reading bacillus It certainly belongs to the proteolyt group, but in view of the somewhat chaotic state knowledge regarding the whole group of anaerobic spor bearers we are *not concerned* for the moment to identify with any previously described, though doubtless it has bee observed and described before, a very similar organis having been noted by Miss Robertson, for example, in wa wounds

The main thing to recognise is the possibility of turnin it to advantage and so using one type of germ to depriv the others of *their breeding ground* Doubtless, also, othe *organisms may* be turned to use, as some have already bee to commercial *purposes*

After the following brief account of the organism we shall append a brief description of a few cases from among many treated by the salt-bag method. They are chosen in order to illustrate points referred to in the paper, and at a later date we hope to be able *to correct where necessary* or to *amplify the statements* we have made Cultures of the organism will willingly be furnished on application to Dr Donaldson, Pathological Department, War Hospital Reading

We feel that the views here expressed and the proofs given will at once supply the key to much that has been obscure to those who have used the salt-pack method to any *extent* They are unanimous in stating that the superiority of the salt pack is an undoubted clinical fact, but why it should be so they admit they cannot explain

We are thoroughly alive to the fact that, while proteolysis of the dead tissue appears to be the fundamental principle involved, there may be other factors of a bio-chemical character at work as a result of this organism's activity, especially in view of the almost immediate and rapid improvement in the general condition of the patient Such, however will form a subject for further research. But there is some evidence for believing that the Reading bacillus is not without effect on the tox albumins produced by other organisms

FIG 2A

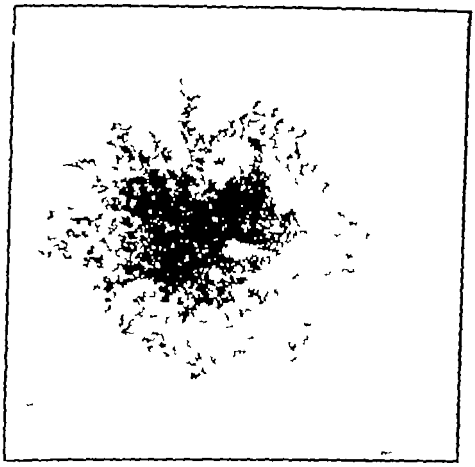
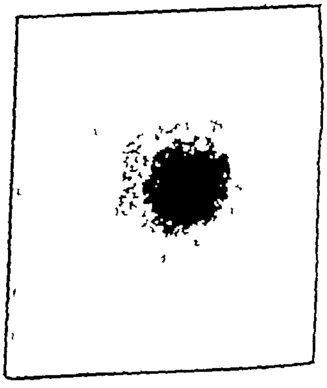


FIG 2B

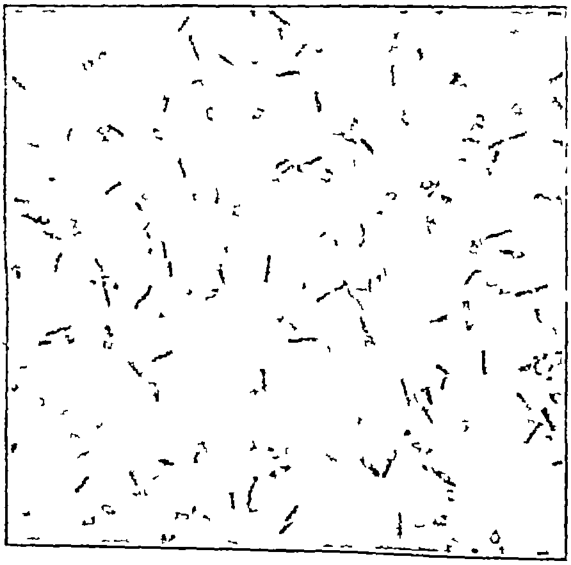


Colonies from an agar plate 18 days old × 10

CHARACTERS OF THE READING BACILLUS

The reasons for giving it this name provisionally have been indicated It appears to be a saprophyte and may be identical with what Miss Robertson has been able to isolate from wound infections, and which, according to her con forms in its morphological and cultural characters with the *B œdematis maligni* of Koch, as described by von Hibler Owing to the non pathogenicity of the Reading bacillus, we do not feel disposed in the meantime to follow Miss Robertson s lead with regard to its correct designation The fact of there being undoubted strains with morphological and cultural characters similar to those of the malignant œdema bacillus of Koch which are nevertheless non pathogenic even when freshly isolated from wound infections, while his bacillus is definitely pathogenic suggests that there is much yet to be done before a correct terminology is arrived at Space forbids the inclusion of any detailed description of the organism and no reference is made to work still in course of investigation The characters as given are based on a study of what we consider to be most likely a pure culture This culture was arrived at (after repeatedly plating out) by the dilution method already referred to and only then after the second attempt

FIG 3



The Reading bacillus grown for 48 hours in maltose broth Gram × 1000.

Morphology —The organism consists of a rod having a fairly large oval subterminal spore (Fig 3) The actual shape is probably best seen in hanging-drop preparations when the body of the bacillus appears to be somewhat torpedo-shaped The blunter and broader end corresponds to the situation of the contained spore and from this the body gradually narrows to the opposite extremity In dried films on the other hand the oval spore appears to bulge out on either side beyond the bacillary body but this is apparently an artefact In a few instances the spore is central while the bacillary body tapers away to either extremity and occasionally one or two can be seen where the oval spore is situated terminally The bacillus is provided with numerous long wavy lateral flagella which when seen detached closely resemble spirilla with regular undulations (Fig 4) Under certain conditions there may be found along with free bacilli chains composed of bacillary elements of varying size one or two of which may even show spore formation The chain form may be represented by an unsegmented filament In young cultures of course non-sporing bacilli predominate while in old cultures on solid media practically nothing remains but spores some of these still in chain formation with the suspicion of the outlines of a filament in which they have apparently been formed

Size —The average length of the sporing bacillus varies from 2 5 to 3μ with a breadth of 0·5 to 0·9μ, while free spores show an average of 1·45μ long by 1·02μ broad These figures refer to the organism in the dried film and of course there are other forms either larger or shorter

Motility —The organism both in its sporing and non sporing form is actively motile having a somewhat waddling movement and the power of motility apparently persists for a considerable length of time

Staining —It is Gram positive stains easily with the usual stains but is not acid fast

Range of growth —Its exact limits of growth or optimum temperature have not been determined but it will grow at 1[illegible]° C and probably also at 41 C although it appears to do best at body temperature It will [illegible] for long in the spore form which appears to be fairly resistant to heat It appears to be strictly anaerobic and has marked proteolytic properties.

[illegible] —All cultures emit a strong characteristic and somewhat fetid though not unbearable odour This is perhaps best observed in meat tubes and if the culture has been raised from spores does not become really strong till the end of the second or third day In about a week's time in such a tube the colour has [illegible]

Gas is also formed in greater or less degree according to the culture medium employed

In broth containing minced up bullock s heart slight blackening begins to appear towards the end of 48 hours where the culture has been raised from spores and is quite definite as a rule on the third day During the same time the volume of contained meat can be seen to be diminishing in volume and to be going into a state of finer subdivision This diminution gradually becomes more marked Gas can be seen on the second day in the form of a few bubbles caught between the fragments of meat but is given off in greater quantities on the third day The gas consists largely of CO_2 H_2S and ammonia The supernatant broth is turbid but in an old tube which has been standing for some time the turbidity deposits and the upper layers of fluid become fairly clear

On *agar* surface colonies are small about the size of small streptococcus colonies (Fig 1) They are slightly raised rounded shiny and translucent at first but later tend to become more opaque The edge is not sharply defined but merges into a radiating tangle of fine threadlike projections for the definition of which a hand lens is generally required In place of or along with these fine filaments may be seen sometimes somewhat broader outgrowths which look like transparent fimbriæ

If the water of condensation has become infected growth occurs fairly rapidly as a faint opalescent film spreading up between the tube and the medium with a growing edge which is often fimbriated The agar ultimately becomes cracked and split up by gas

Deep colonies can just be seen with the naked eye after 48 hours growth when their size resembles that of young streptococcus colonies They appear however slightly opaque depending on their depth in the medium and their size and have a dirty white colour With a hand lens the central part appears irregular in shape being oval triangular &c with rather blurred edges which merge into a tangled massed of filaments which are growing out from it into the medium. The resulting colony looks fluffy resembling a little speck of cotton wool embedded in the medium (Figs 2A and 2B) The best growth is apparently obtained in media to which glucose has been added

Gelatine is fairly rapidly liquefied the fluid becoming turbid

Inspissated serum is gradually eaten away the crumbling edges being slightly blackened

Dorset egg medium is more rapidly broken down preceding which there is a greyish black discolouration of the medium

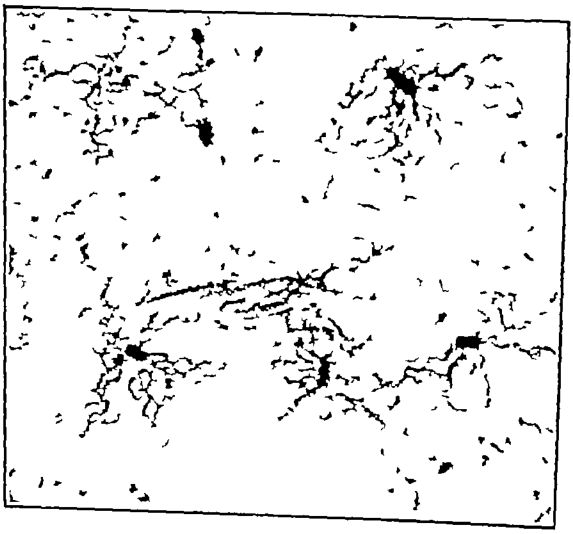
Broth becomes turbid with a greater or less fleecy deposit, according to the ingredients of the medium and there is a certain amount of gas generated. This is considerable in glucose and in glycerine broth but rather less in plain nutrient broth and only a very little in inulin broth The turbidity is greatest in glucose broth and least in glycerine On standing for some time the deposit tends to settle leaving the upper layers of fluid fairly clear except in the case of glucose broth

Potato —No growth visible to the naked eye has been observed even after some weeks of culture, but slight growth does take place

Litmus milk.—No clot is observed even after many days' incubation Instead the milk is broken down into fine granules and it becomes much less opaque and more watery After three days incubation it is apparently slightly acid and differs in this respect from the cultural characters of the organism described by Miss Robertson Gas is produced

Litmus peptone water is rendered turbid and definitely alkaline No indol appears to be formed

FIG 4



Reading bacillus showing flagella from a 24 hours agar slope × 1000

Fluid egg medium becomes more opaque a fairly heavy deposit settles and considerable gas is generated

Neutral-red broth —No change in colour is observed in strong dilutions The neutral red inhibits the growth of the organism and apparently kills it as subcultures made from various dilutions have failed to grow In higher dilutions however the colour is discharged and the fluid becomes markedly fluorescent

Other media.—In the case of the sugars glucosides &c., the reactions of the Reading bacillus have been observed in litmus peptone water and also on serum litmus agar each with its appropriate sugar The sugars unfortunately were not pre-war sugars and the peptone was Fairchild s Glucose maltose lævulose and dextrine are all turned acid while a considerable quantity of gas is generated The colour change is not of equal intensity in all four tubes Saccharose and sorbite are rendered a lilac tint the former having much less gas and only changing colour after several days incubation No acidity has been observed in mannite, lactose, raffinose, dulcite, inulin starch salicin or glycerine although there was a slight generation of gas in all except in the last where it was fairly considerable

Optimum reaction —This is probably about + 5 to phenolphthalein A good growth is also obtained in broth with a reaction of + 3 5 After 10 days incubation however growth also took place in broths with a reaction of + 16 75 + 10 5 and − 0 5 respectively The reactions were determined in uninoculated broths in the cold after final sterilisation.

Pathogenicity —Rabbits mice and guinea pigs have been inoculated intravenously intraperitoneally or subcutaneously into the muscles both with cultures grown on solid and in fluid media respectively The cultures were of various ages We do not propose to go into details of dosage &c. beyond stating that as many as 30 000 millions of living bacilli have been given to guinea pigs without death or any other disturbance taking place As noted in the text, it has been now sown in very liberal quantities both in recently incised as well as in septic wounds of varying age without any evidence of the slightest pathogenicity Further experimental work is in hand but it would be premature to mention this at present.

Record of Cases

We now append a few cases, chosen because they illustrate most of the points raised in the paper and because they bear out the statements made concerning the beneficial action of the bacillus and its non pathogenicity

CASE A.—Admitted with gunshot wound of left buttock and a smaller wound near right anterior inferior iliac spine containing a foreign body On arrival in Reading it was suppurating and had been plugged with gauze For the next 5 days there was an irregular temperature ranging from 99° to 104° F with pulse of 96 to 116 At the end of this period of 5 days the wounds were thoroughly laid open the foreign body removed and salt bags inserted

The temperature, however did not fall and it was noted that the characteristic salt-bag odour was absent. The bags were left *in situ* for 6 days and as there was no improvement, they were removed, and eusol dressings substituted It was noted on removal that the wound was œdematous and unhealthy and that no separation of the sloughs had occurred Eusol dressings were persisted in for the next 21 days before the wound could be pronounced clean and healthy although the temperature came down after 4 days of eusol treatment and remained down with the exception of 9 days during which it fluctuated between 100° and normal

This is an example of a wound packed with salt bags which did not smell and which took 40 days from receipt of injury to reach a point when it could be considered a healthy granulating surface.

CASE B —Admitted at Reading 10 days after receipt of gunshot wound of right knee involving the joint. The wound was very sloughy thoroughly exposed and the patella had evidently been removed *Six days later the limb above and below the joint appeared* very œdematous and a considerable amount of pus could be expressed from under the skin on the inner side of the joint. Two days later this sinus was laid freely open Five days thereafter the œdema of leg and thigh was more pronounced and the patient appeared hectic The wound was at once thoroughly opened up again multiple superficial incisions made in the neighbourhood and the whole well packed with salt bags

Five days later there was no evidence of characteristic odour from the dressings the temperature still continued to jump and the man was evidently going down hill The following day after consultation, amputation was performed through the thigh Four days later the patient died.

This is another example of free exposure of the wound and subsequent packing with salt bags No improvement whatever took place no salt-bag odour was detected and the man died apparently of septicæmia

CASE C —Admitted at Reading with gunshot wound of right leg together with a compound fracture of the femur received about 3 months previously The history was as follows The patient lay out in the open for 4 days before being brought in and he remained at the C C S for 11 days during which time gas gangrene developed and the patient became very ill He was removed to a base hospital where the wounds were explored and drained (No notes available of the wound dressings at that time) Later a sequestrum was removed. The wound was then packed with salt bags but for some reason these were removed the following day his temperature being 102 4° F and his pulse 138 The wound was then syringed with H_2O_2 His condition still remained bad He was then transferred to England

For the first few days after admission to Reading he appeared to make satisfactory progress Then swelling and œdema of the thigh and rise of temperature made themselves apparent and 7 days later the wounds were freely opened up and the bone drilled The latter was soft and infiltrated with inflammatory products but no free pus was discovered The wounds were then packed with salt bags Two days thereafter the wound emitted a powerful and characteristic odour and the edges looked dirty and sloughy Cultures were made and the Reading bacillus isolated together with pyogenic organisms Six days after packing the salt bags were removed and the patient s condition was excellent Three days later after normal saline dressing the wound was reported to be clean and lined with healthy red granulations A few days later a small sequestrum came away in the dressings and in 6 weeks time from the introduction of the salt bags the wound was completely healed.

This case illustrates several points The patient had suffered considerably from exposure before treatment and had developed gas gangrene Salt bags had been applied abroad but were not persevered with beyond one day On reaching Reading salt packs were again introduced and kept in The temperature fell the following day and remained normal The wound gave out the characteristic smell and the Reading bacillus was isolated from the discharges

CASE D —Admitted with accidental gunshot wounds of left thigh testicle and right arm received the same day several foreign bodies being present in the wound There was an entrance wound just below fold of left buttock and a large explosive exit wound in the upper third of left thigh a wound of the left side of scrotum and a transverse wound on the flexor aspect of right wrist In the region of the thigh wound there was much destruction of muscle tissue. The femoral artery was exposed and lying bare on the outer side of the wound A piece of the tuber ischii had been chipped off and a channel passed up into the pelvis.

Lister s technique was used for disinfecting the skin the wound was irrigated with 1 in 3000 biniodide and salt bags were introduced. The testicle was removed and the wound on the wrist stitched up

Four days later the salt bags were removed as the temperature was rising and the edges of the wound looked black sloughy and semi digested The odour was intense but characteristic. There was no swelling or œdema anywhere near the wound *Cultures made from the* pus showed the presence of the Reading bacillus Eusol irrigation was substituted for the salt bags and next day it was noted that the dead muscle was coming away freely in fairly large quantity The wound still had a greyish black appearance and still smelt. The temperature however, had not come down and on further investigation it was found that the right hand was swollen and œdematous The stitches were removed from the wrist wound and a considerable quantity of pus escaped

Three days after removal of salt bags the wound in the thigh was found lined with healthy red granulations with a few specks of sloughy material on the surface and a larger one on the outer side of the wound There was some brown foul smelling pus in the wound but no surrounding œdema or erythema. Eight days after removal of the salt packs the wound presented a brilliant red colour and looked like a text-book illustration of a dissection of Scarpa s triangle. The temperature did not come down till the wrist, which had *not* been treated with salt packs had improved

This case also affords some points of interest. First it was a gunshot wound seen immediately after infliction and there was much destruction of muscle tissue The Reading bacillus was present as presumed from the almost overwhelming odour and as proved by culture The salt packs however were removed as the temperature was going up This on further consideration was a mistake The rise of temperature was in reality due to the progressive infection of the wrist wound The much larger wounds in thigh and buttock while *looking sloughy and black presented no signs of* acute infection The sloughs separated rapidly but probably not so quickly as they would have done if the salt bags had been left a day or two longer The devitalised tissues were obviously in process of digestion and indeed, granulations had already begun to form This wound was in a healing condition before the wrist wound untreated with salt packs had begun to clear up

CASE E —Admitted at Reading with gunshot wound of left thigh and leg received about two months previously The history before arrival in England was as follows There had been a very severe gaseous cellulitis of the leg and a less severe one of the thigh Carrel Dakin treatment had been used throughout. He had already been in the operating theatre *on 25 occasions for various* operative measures before reaching England On arrival here the limb was still very œdematous the four leg wounds looked unhealthy the granulations were sodden and œdematous and tunnels ran in *through them to the bone* these tunnels being occupied with Carrel Dakin tubes The wound in the thigh was similar to that in the leg and was discharging much pus

All 5 wounds were laid freely open deep collections of pus evacuated from each and small sequestra removed All were then dried with plain gauze and sown copiously with a living culture of the Reading bacillus Each one was firmly packed with salt bags moistened in normal saline and layers of gauze similarly moistened were laid across the wounds The temperature rose after the packing as it does in most cases but the patient was comfortable. On the second day after packing the œdema was seen to have diminished

The salt bags were left *in situ* for 9 days and on removal of the bags the characteristic odour made its presence strongly felt. The superficial gauze was seen to be dry brown board like and firmly adherent to the skin all round the wounds The odour was quite characteristic On loosening the adherent edges the whole packing came out *en bloc* bathed in yellow pus

The thigh wound was then irrigated with eusol after which it was seen to be perfectly clean and red. The fragment of exposed bone could be seen *in situ* looking white and clean All œdema had disappeared from the tissues around

The wounds in the leg showed much the same appearance, but there were still present in them a few very delicate thin sloughs which looked as if they were nearly digested while bright-red easily bleeding granulations could be seen all round All œdema had disappeared from the ankle and foot and had almost disappeared from the leg The wounds were simply irrigated with eusol and dressed with plain gauze daily and are now healing up

This case again is of interest, as it was one of severe multiple wounds with comminuted fractures of femur and leg bones which had become infected with a gas producing bacillus. He had been under Carrel Dakin treatment for two months and had had 25 operations of one sort or another performed In spite of this the wounds were unhealthy full of pus and the limb œdematous on arrival in Reading No risks were taken and the Reading bacillus was at once sown and salt packing applied without any other operative procedure whatever beyond reopening the wounds more freely evacuating pus and swabbing up with dry gauze Within ten days from the commencement of the treatment the wounds were healthy lined by strong granulations and all œdema had gone The Reading bacillus was recovered from the wound when the salt packs were removed

CASE F —Admitted at Reading 17 days after receipt of gunshot wounds of left leg and chest There were two clean wounds above the left ankle together with a fracture of the fibula There was another situated on the posterior aspect and several more on the leg and thigh as well as three clean wounds of left side of chest and a small hole on the front of the right thigh discharging pus Nine days later it was noted that the wound above the right ankle was suppurating and two days after that, as the patient s temperature continued to show a daily rise an abscess was evacuated from the region of the left ankle together with a foreign body The wound being thus laid freely open was then packed with salt bags

These bags were left *in situ* for six days without interference mean while no odour was perceptible and the temperature showed even greater daily fluctuations than before The bags were accordingly removed and it was seen that there were considerable swelling and œdema of the foot and ankle Cultures were made from the pus but we failed to isolate the Reading bacillus The following day the wound was reopened pus evacuated and the cavity dried out with sterile gauze The wound was then liberally sown with a living culture of the Reading bacillus and immediately packed with bags of sphagnum moss moistened with sterile water

The following day the patient stated that the ankle was more comfortable than it had been since he was wounded The temperature fell considerably on the third day and on the seventh day after moss packing it came down for good The moss was left *in situ* for six days, during which time the characteristic odour was very perceptible From cultures taken on removal of the bags the Reading bacillus was recovered

The superficial gauze and layers of the sphagnum moss bags had set quite hard and board like as in the case of the salt bags The wounds were covered with a greyish yellow purulent discharge but on irrigation with eusol they were found to be lined with perfectly healthy red granulations All swelling of the foot and ankle had disappeared

This case illustrates that free opening of the wound evacuating of pus and plugging with salt bags is not necessarily followed by improvement In connexion with this are to be taken the facts that the characteristic smell was absent and that we failed to prove the presence of the Reading bacillus At the second operation the Reading bacillus was introduced in living culture and to eliminate any action by salt an inert substance sphagnum moss was used for packing The wound at once began to do well and in six days was a granulating healthy surface The characteristic odour was present and the organism was recovered It is to be noted that while the sphagnum moss bags were hard and board like on removal exactly as is observed with salt packs the initial copious flow of fluid which always occurs during the first 24 hours after the introduction of salt bags was absent. The effect of the concentrated salt where salt bags are used is probably solely a hydragogic one, since both are equally hard and dry on removal suggesting a more or less impermeable layer of albuminous matter while inside there is a copious supply of fluid pus

CASE G —Admitted at Reading with gunshot wounds of left foot and right leg received eight days previously On arrival it was found that pieces of shrapnel had been removed from both wounds There was a small suppurating wound on the inner side of the left foot just above the base of the first metatarsal bone The outer side of the foot was œdematous There were also through and through wounds about two inches apart over middle of fibula

Three days later the wound in the foot was opened up for the purpose of extracting a foreign body and the cavity was then packed with Morison s B I P P Nine days thereafter he was sent to an auxiliary hospital Nine days after that a small piece of bone came away from the foot Five days thereafter the patient complained of severe pain in the foot with a temperature of 100° F Fomentations were applied but it became more swollen and painful and two days later the foot was incised on the inner side The outer side of the foot was discharging pus freely The temperature was now 101 4° Saline baths and fomentations were applied Seven days later as the temperature refused to come down the patient was anæsthetised and several pieces of the scaphoid were removed Incisions were made in many places pus evacuated and drainage tubes inserted

Next day the foot was still greatly swollen but there was very little free discharge and the temperature was still up Three days later as no satisfactory progress was being made the patient was sent back to the central hospital for further treatment or amputation On arrival in Reading the patient was again anæsthetised and after taking samples of the pus for cultural purposes multiple incisions were made into the foot and the mid tarsal joint was found to be infected The wounds were then irrigated with hot normal saline and both the old wounds and the freshly made incisions were sown with a living culture of the Reading bacillus The wounds were then packed with salt bags The cultures made from the pus yielded a copious growth of *Streptococcus longus*, together with a few colonies of *Staphylococcus aureus*

The temperature immediately began to fall and the œdema to diminish while the characteristic odour made itself evident The salt bags were removed in five days time and the wound irrigated with normal saline. They were lined with a sero-purulent exudation and there were present some dirty sloughs, which cleaned up at once under irrigation Cultures were made from the wounds and streptococci staphylococci and the Reading bacillus were isolated Three days later under simple normal saline dressings, the sloughs were found to be fast disappearing and the wounds were rapidly cleaning up Cultures made at this point yielded only staphylococci and the Reading bacillus Three days later the wounds were perfectly clean and lined by firm red, healthy granulations Cultures made showed only a few colonies of staphylococci and diphtheroids but the Reading bacillus was not again recovered. In about six weeks from the date of removal of the salt bags all the wounds in the foot were healed The movements of the foot were much improved and there was considerably less talipes equinovarus.

This patient appeared to be doing fairly well after the B I P P treatment There was however apparently a latent infection still present in spite of the B I P P treatment which flared up later In spite of multiple incisions saline baths and saline dressings the foot went from bad to worse The patient was extremely ill the foot greatly swollen and bright red due to the streptococcal infection and the discharge was scanty The joint was found to be involved The Reading bacillus together with salt packing at once altered the patient s condition and his foot made an uninterrupted recovery It is further to be noted that even after five days of salt-bag treatment streptococci were still present showing how much value to lay on the supposed bactericidal properties of the salt pack The B I P P treatment in this case had not been a success

In conclusion our thanks are due to the sisters and nurses for their intelligent coöperation in the clinical side of the work, and to Miss Clark B Sc to Mr R C McLean, D Sc., and to Mr Lamb for their active and ungrudging assistance in the scientific part of the investigation

Summary

1 Three main methods of wound treatment are at present in vogue the antiseptic, the physiological, and the surgical, viz , by excision of the wound The last-named has come into vogue because of the disappointing results obtained from the first two, on the score of their inefficacy or because of the time element

2 From the physiological or hypertonic saline method has evolved as an offshoot the salt-pack treatment of wounds for which its advocates claim extraordinarily good results

3 These include the simplicity of method, the avoidance of daily dressing of the patient, the rapidity with which the wound becomes a healthy granulating surface, the absence of secondary hæmorrhage, and the rapid general improvement of the patient All this means a considerable curtailment of the time spent by the wounded man in hospital

4 Hitherto the good results have been attributed in some obscure way to the presence of the salt acting more or less on the physiological lines described by Wright , but it is felt by all who have written about salt packs that some other explanation is necessary

5 We afford what we believe to be the true explanation of the phenomena observed, and believe that it will clear up many of the points that have hitherto been obscure

6 The key to the situation depends on two observations—one clinical the other bacteriological The former consists in the fact that cases which smell (and the odour is one of the most characteristic features of these cases) do well, while those which do not make no headway The bacteriological observation consists in the discovery that a certain bacillus is apparently constant in the wounds which emit the odour, while it is absent or cannot be recovered from those which do not smell

7 This bacillus is a spore-bearing anaerobe of a saprophytic nature and belongs to the proteolytic group of organisms—the group which includes *B tetani* and *B œdematis maligni*

8 Unlike these latter, it appears to be non pathogenic to the animals experimented on, and what is of more importance, appears to be non pathogenic for man when introduced into wounds Further unlike the above-named pathogenic varieties, it does not appear to set free any toxins injurious to the patient in the course of its action on the dead tissues

9 A brief outline of the morphological and cultural characters of the organism is given its probable mode of action and the results of animal experiment

10 While it may be one that has been fully described before, we make no attempt in this paper to identify it with such in view of the somewhat chaotic state of our knowledge regarding anaerobes Hence, for convenience sake, we call it the *Reading bacillus*

11 It acts, apparently in virtue of its proteolytic powers only on devitalised tissue, and possibly on tox albumins, and appears to possess no power of attacking healthy structures

12 Special stress is laid on the necessity of recognising the fact that one of the chief factors which keep a wound septic is the presence of devitalised tissue in that wound This acts as a base from which pathogenic organisms attack the body We would lay even greater stress on this than on the infecting organisms

13 The surgical or excision treatment of wounds apparently recognises this but only aims at removing macroscopically devitalised tissues, and in doing so inflicts a fresh trauma liable to reinfection

14 For this we propose to substitute the Reading bacillus in a living form and it is probably present in most of the wounds if only given a chance to carry on its functions These are directed towards the removal not only of the grossly damaged tissue, but it succeeds also in attacking the microscopically damaged structures As a result the body forces are freed from the constant menace of septic poisoning, thus allowing them to begin the work of repair

15 We give examples of gunshot wound cases which have been treated in various ways previously, including the salt-bag method, but without success These however, on being sown later with living cultures of the bacillus, have immediately started to do well and have ended in rapid recovery

16 The organism is probably present in the larger number of infected wounds but requires more or less anaerobic conditions before it can come into play

17 These are provided by the pack method of treatment, but we are inclined to think that salt is not a necessary adjuvant

considerable quantity of gas is generated The colour change is not of equal intensity in all four tubes Saccharose and sorbite are rendered a lilac tint the former having much less gas and only changing colour after several days incubation No acidity has been observed in mannite lactose raffinose dulcite, inulin starch salicin or glycerine although there was a slight generation of gas in all except in the last where it was fairly considerable

Optimum reaction —This is probably about + 5 to phenolphthalein A good growth is also obtained in broth with a reaction of + 3 5 After 10 days incubation however, growth also took place in broths with a reaction of + 16 75 + 10 5 and − 0 5 *respectively The reactions* were determined in uninoculated broths in the cold after final sterilisation

Pathogenicity —Rabbits mice, and guinea pigs have been inoculated intravenously intraperitoneally or subcutaneously into the muscles both with cultures grown on solid and in fluid media respectively The cultures were of various ages We do not propose to go into details of *dosage &c beyond stating that as many as 30 000* millions of living bacilli have been given to guinea pigs without death or any other disturbance taking place As noted in the text, it *has been now sown* in very liberal quantities both in recently incised as well as in septic wounds of varying age without any evidence of the slightest pathogenicity Further experimental work is in hand but it would be premature to mention this at present

RECORD OF CASES

We now append a few cases, chosen because *they* illustrate most of the *points raised* in the *paper* and *because they* bear out the statements made concerning the beneficial action of the bacillus and its non pathogenicity

CASE A —Admitted with gunshot wound of left buttock and a smaller wound near right anterior inferior iliac spine containing a foreign body On arrival in Reading it was suppurating and had been plugged with gauze For the next 5 days there was an irregular temperature ranging from 99° to 104° F with pulse of 96 to 116 At the end *of this period of 5 days* the wounds were thoroughly laid open the foreign body removed and salt bags inserted

The temperature, however, did not fall and it was noted that the characteristic salt-bag odour was absent. The bags were left *in situ* for 6 days and as there was no improvement they were removed and eusol dressings substituted It was noted on removal that the wound was œdematous and unhealthy and that no separation of the sloughs had occurred Eusol dressings were persisted in for the next 21 days before the wound could be pronounced clean and healthy although the *temperature came down after 4 days of eusol treatment, and remained* down with the exception of 9 days during which it fluctuated between 100° and normal

This is an example of a wound packed with salt bags which did not smell and which took 40 days from receipt of injury to reach a point when it could be considered a healthy granulating surface

CASE B —Admitted at Reading 10 days after receipt of gunshot wound of right knee involving the joint The wound was very sloughy thoroughly exposed and the patella had evidently been removed Six days later the limb above and *below the joint* appeared very œdematous and a considerable amount of pus could be expressed *from under the skin on the inner side of the joint Two days* later this sinus was laid freely open Five days thereafter the œdema of leg and thigh was more pronounced and the patient appeared hectic The wound was at once thoroughly opened up again multiple superficial incisions made in the neighbourhood and the whole well packed with salt bags

Five days later there was no evidence of characteristic odour from the dressings *the temperature still continued to jump* and the man was evidently going down hill The following day after consultation amputation was performed through the thigh Four days later the patient died.

This is another example of free exposure of the wound and subsequent packing with salt bags No improvement whatever took place no salt-bag odour was detected, and the man died apparently of septicæmia.

CASE C —Admitted at Reading with gunshot wound of right leg together with a compound fracture of the *femur received* about 3 months previously The history was as follows The patient lay out *in the open for* 4 *days before* being brought in and he remained at the *C C S* for 11 days during which time gas gangrene developed and the patient became very ill He was removed to a base hospital where the wounds were explored and drained (No notes available *of the* wound dressings at that time) Later a sequestrum was removed The wound was then packed with salt bags but *for some reason these were removed the following day his temperature* being 102 4° F and his *pulse 138 The wound* was then syringed with H_2O_2 His condition still remained bad He was then transferred to England

For the first few days after admission to Reading he appeared to make satisfactory progress Then swelling and œdema of the thigh and rise of temperature made themselves apparent, and 7 days later the wounds were freely opened up and the bone drilled *The latter* was soft and infiltrated with inflammatory products but no free pus was *discovered The wounds were then* packed with salt bags Two days thereafter the wound emitted a powerful and characteristic odour and the edges looked dirty and sloughy Cultures were made and the Reading bacillus isolated together with pyogenic organisms *Six days* after packing the salt bags were removed and the patient s condition was excellent. Three days later after normal saline dressing the wound was reported to be clean and lined with healthy red granulations *A few days later a small* sequestrum came away in the dressings and in 6 weeks time from the introduction of the salt bags the wound was completely healed

This case illustrates several points The patient had suffered considerably from exposure before treatment and had developed gas gangrene *Salt bags had been applied abroad* but *were* not *persevered* with beyond one day On reaching Reading salt packs were again *introduced and kept in* The temperature fell the following day and remained normal The wound gave out the characteristic smell and the Reading bacillus was isolated from the discharges

CASE D —Admitted with accidental gunshot wounds of left thigh testicle, and right arm received the same day, several *foreign* bodies being present in the wound. There was an entrance wound just below fold of left buttock and a large explosive exit wound in the upper third of left thigh a wound of the left side of scrotum and a transverse wound on the flexor aspect *of right wrist* In the region of the thigh wound there was much *destruction of muscle tissue* The femoral artery was exposed and lying bare on the *outer side of the wound* A piece of the tuber ischii had been chipped off and a channel passed up into the pelvis

Lister's technique was used for disinfecting the skin the wound was irrigated with 1 in 3000 biniodide, and salt bags were introduced. The *testicle* was removed and the wound on the wrist stitched up

Four days later the salt bags were removed as the temperature was rising and the edges of the *wound looked black sloughy* and semi digested The odour was intense but characteristic There was no swelling or œdema anywhere near the wound Cultures *made from the* pus showed the presence of the Reading bacillus Eusol irrigation was substituted for the salt bags and next day it was noted that the dead muscle was coming away freely in fairly large quantity The wound still had a greyish black appearance and still smelt. The temperature *however had not come down and on further* investigation it was found that the right hand was swollen and œdematous The stitches were removed from the wrist wound and a considerable quantity of pus escaped

Three days after removal of salt bags the wound in the thigh was found lined with healthy red granulations with a few specks of sloughy material on the surface and a larger one on the outer side of the wound There was some brown foul-smelling pus in the wound but no surrounding œdema or erythema Eight days after removal of the salt packs *the wound presented* a brilliant red colour and looked like a text-book illustration of a dissection of Scarpa s triangle The temperature did not come down till the wrist which had *not* been treated with salt packs had improved.

This case also affords some points of interest. First it was a gunshot wound seen immediately after infliction and there was much destruction of muscle tissue The Reading bacillus was present as presumed *from the almost overwhelming odour and as proved by culture.* The salt packs however were removed as the temperature was going up This on further consideration was a mistake The rise of temperature was in reality due to the progressive *infection* of the wrist wound The much larger wounds in thigh and buttock, while looking sloughy and black presented no signs of acute infection The sloughs separated rapidly but probably not so quickly as they would have done if the salt bags had been left a *day or* two longer The *devitalised tissues were obviously in process of digestion, and* indeed *granulations* had *already begun to form* This wound was in a healing condition before the wrist wound untreated with salt packs had begun to clear up

CASE E —Admitted at Reading with gunshot wound of left thigh and leg received about *two months previously The history before arrival* in England was as follows There had been a very severe gaseous *cellulitis of the leg and a less severe one of* the thigh Carrel Dakin treatment had been used throughout. He had already been in the operating theatre *on* 25 occasions for various operative measures before reaching England. On arrival here the limb was *still* very œdematous the four leg wounds looked unhealthy the granulations were sodden and œdematous and tunnels ran in through *them to the bone* these tunnels being occupied with Carrel Dakin tubes. The wound in the thigh was similar *to* that in the leg and was discharging much pus

All 5 wounds were laid freely open deep collections of pus evacuated from each and small sequestra removed. All were then dried with plain gauze and sown copiously with a living culture of *the Reading* bacillus Each one was firmly packed with salt bags moistened in normal saline and layers of gauze *similarly moistened were* laid across the wounds The temperature rose after the packing as it does in most cases *but* the patient was comfortable. *On the* second day after packing the œdema was seen *to* have diminished

The salt bags were left in situ for 9 days and on removal of the bags the characteristic odour made its presence *strongly* felt. The superficial gauze was seen to be dry brown, board like and firmly adherent to the skin all round the wounds The odour was *quite characteristic* On loosening the adherent edges the whole packing came out *en bloc* bathed in yellow pus

The thigh wound was then irrigated with eusol after which it was *seen to be perfectly clean* and red. The fragment of exposed bone could be seen *in situ* looking white and clean All œdema had disappeared from the tissues around

The wounds in the leg showed much the same appearance, but there were still present in them a few very delicate thin sloughs which looked as if they were nearly digested while bright red easily bleeding granulations could be seen all round All œdema had disappeared from *ankle and foot* and had *almost* disappeared *from* the leg The wounds were simply irrigated with eusol and dressed with plain gauze daily and are now healing up

This case again is of interest as it was *one of* severe multiple wounds with comminuted *fractures of femur* and leg bones which had become *infected* with a *gas-producing* bacillus He had been under Carrel Dakin treatment *for two months* and had had 25 operations *of one sort or another performed In spite of this* the wounds were unhealthy full of pus and the limb œdematous on arrival in *Reading No risks* were taken and the Reading bacillus was at once sown and salt packing applied without any other operative procedure whatever beyond reopening the wounds more freely evacuating pus and swabbing up with *dry* gauze Within ten days *from the commencement* of the treatment the wounds were healthy lined by strong granulations and all œdema had *gone* The Reading bacillus was recovered from the wound when the salt packs were removed

CASE F —Admitted at Reading *17 days* after receipt *of* gunshot wounds of left leg and chest There were two clean wounds above the left ankle *together with a fracture* of the fibula There was another situated on the posterior aspect and several more on the leg and thigh *as well as* three clean wounds of left side of chest and a small hole on the front of the right thigh discharging pus *Nine days* later it was noted that the wound above the right ankle was suppurating and two days after that, as the patient s temperature continued *to* show a daily rise an abscess was evacuated from the region of the left ankle *together with a foreign body* The wound being thus laid freely open was then packed with salt bags.

These bags were left *in situ* for six days without interference meanwhile no odour was perceptible and the temperature showed even greater daily fluctuations than before The bags were accordingly removed and it was seen that there were considerable swelling and œdema of the foot and ankle Cultures were made from the pus, but we failed to isolate the Reading bacillus The following day the wound was reopened pus evacuated and the cavity dried out with sterile gauze The wound was then liberally sown with a living culture of the Reading bacillus and immediately packed with bags of sphagnum moss moistened with sterile water

The following day the patient stated that the ankle was more comfortable than it had been since he was wounded The temperature fell considerably on the third day and on the seventh day after moss packing it came down for good The moss was left *in situ* for six days during which time the characteristic odour was very perceptible From cultures taken on removal of the bags the Reading bacillus was recovered

The superficial gauze and layers of the sphagnum moss bags had set quite hard and board like as in the case of the salt bags The wounds were covered with a greyish yellow purulent discharge but on irrigation with eusol they were found to be lined with perfectly healthy red granulations All swelling of the foot and ankle had disappeared.

This case illustrates that free opening of the wound evacuating of pus and plugging with salt bags is not necessarily followed by improvement In connexion with this are to be taken the facts that the characteristic smell was absent and that we failed to prove the presence of the Reading bacillus. At the second operation the Reading bacillus was introduced in living culture and to eliminate any action by salt an inert substance sphagnum moss was used for packing The wound at once began to do well and in six days was a granulating healthy surface The characteristic odour was present and the organism was recovered It is to be noted that while the sphagnum-moss bags were hard and board like on removal exactly as is observed with salt packs the initial copious flow of fluid which always occurs during the first 24 hours after the introduction of salt bags was absent The effect of the concentrated salt where salt bags are used is probably solely a hydragogic one since both are equally hard and dry on removal suggesting a more or less impermeable layer of albuminous matter while inside there is a copious supply of fluid pus

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Three days later the wound in the foot was opened up for the purpose of extracting a foreign body and the cavity was then packed with Morison's B I.P P Nine days thereafter he was sent to an auxiliary hospital. Nine days after that a small piece of bone came away from the foot Five days thereafter the patient complained of severe pain in the foot with a temperature of 100° F Fomentations were applied but it became more swollen and painful and two days later the foot was incised on the inner side The outer side of the foot was discharging pus freely The temperature was now 101·° Saline baths and fomentations were applied. Seven days later as the temperature refused to come down the patient was anæsthetised and several pieces of the scaphoid were removed Incisions were made in many places pus evacuated and drainage tubes inserted

Next day the foot was still greatly swollen, but there was very little free discharge and the temperature was still up Three days later as no satisfactory progress was being made the patient was sent back to the central hospital for further treatment or amputation. On arrival in Reading the patient was again anæsthetised and after taking samples of the pus for cultural purposes multiple incisions were made into the foot and the mid tarsal joint was found to be infected The wounds were then irrigated with hot normal saline and both the old wounds and the freshly made incisions were sown with a living culture of the Reading bacillus The wounds were then packed with salt bags The cultures made from the pus yielded a copious growth of *Streptococcus longus* together with a few colonies of *Staphylococcus aureus*

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16 The organism is probably present in the larger number of infected wounds but requires more or less anaerobic conditions before it can come into play

17 These are provided by the pack method of treatment, but we are inclined to think that salt is not a necessary adjuvant

and plays a very small role, if any This seems indicated by the fact that an inert substance like sphagnum moss for packing gives equally good results

18 It is essential however, that the wound be thoroughly well laid open in the first instance, exposing every pocket and sinus, so that the packing may completely fill the wound

19 We are conscious that many subsidiary points have still to be worked out, and even some of the above statements may have to be modified We feel, however, that the underlying principles are sound and offer a true explanation of the phenomena which have been described by those who have used salt bags It sounds heresy to advocate the introduction of living organisms to a wound, and, above all, anaerobic spore bearers, but it has been done with success by us In view, therefore, of the urgent needs of the moment, we offer these results of our investigations, carried out amidst much routine work, as we feel convinced that a knowledge of them will lead to further developments, and such knowledge ought to be shared *now* with others who may have opportunities for the investigation of a larger number of wounds than we have

20 Further investigation is proceeding, and it is hoped that we shall be able to make a communication later

References—1 St. Bart's Hospital Journal October 1916 p 3 2. Brit. Med Jour August 26th 1916 p 282. 3 THE LANCET May 26th 1917 p 821 4 Brit. Med Jour, August 26th 1916 p 282. 5 Brit. Jour of Surgery April 1917 p 562. 6 THE LANCET May 27th, 1916 p 1077 7 THE LANCET June 17th 1916 p 1203 8 Jour of Path and Bacter, January, 1916 p 327

LIQUID-TIGHT CLOSURE AND THE TREATMENT OF WOUNDS

BY WALTER H TAYLOR, M D, C M TORONTO,
AND
NORMAN B TAYLOR, F R C S EDIN,
CAPTAINS C.A.M C

IN the summer of 1916 convoys arrived at base hospitals in France with many bad-looking wounds, their dressings dried and caked owing to suspension of treatment during transit With free incision, the employment of drainage tubes, and a solution of eusol, the majority of these wounds did well Too often, however, they failed to respond, and in these cases post-amputation dissection indicated that crevices of the wound had not been reached by the solution

At that time we had not heard of Carrel's method, but the importance of bringing fresh solution in contact with as large an extent of the wound cavity as possible seemed obvious To this end we thought of creating an ebb and flow in the wound by repeatedly filling it under pressure and allowing the fluid to escape A catheter was inserted having a hole about its middle discharging in the centre of the wound and its lower end tied off The escape of fluid was obstructed by plugging the wound openings with gauze Irrigation was regulated by a clip on the tube connecting the catheter with a reservoir

Distension of the wound occurred during flow, followed by leakage and collapse of its walls when the flow was stopped, thus furthering the mixing of fluids in the wound much as the interchange of gases is promoted in the lungs by the act of breathing In a sense the wound was made to breathe

This "tidal movement" in the wound we regard as important It is essentially a cleansing action A nurse employs it in rinsing a sponge by squeezing it in a basin of water In wounds whose ramifications are many and tortuous this plan is particularly efficacious and, in our hands, has given excellent results

Closely associated with this washing of the wound is its ventilation Many surgeons leave wounds open to the air for this purpose It is to be remembered, however, that air or oxygen makes contact with the tissues only through the medium of fluids Exposing a deep wound to the air is of little avail unless air containing fluids are made to penetrate its depths This precisely is what tidal flushing does

These first cases in which we plugged the wound openings with gauze made notable recoveries But the expenditure of fluid was excessive, resulting in troublesome leakage into the dressings and thence into the bed The value of the procedure was appraised correctly by a nursing sister who remarked that the cases did well enough, but that the mattresses were ruined

Carrel obviates much of this by using small calibred tubes and by apportioning the amount of fluid injected to the size of the wound But the user of this method is on the horns of a dilemma—if too much fluid is injected he will have leakage and wet beds to contend with, yet if he does not use "too much" he cannot be certain that the fluid is coming in contact with the whole interior of the wound It requires tension in the wound for this, and tension spells overflow Moreover, such careful regulation of the fluid in the absence of any convenient means of flushing the wound encourages the accumulation of pus and débris which blocks the tubes, necessitating frequent dressings On ambulance trains the multiple tube method of irrigation is at a greater disadvantage

From these considerations, then, tension in the wound being necessary if tidal movements are to be had, and tension being impossible without closure it appeared to us that some trustworthy system of watertight closure was needed in the treatment of wounds

The First Device its Mode of Use

This object was first attained by means of a rubber bag after the pattern of an ice-bag, shown in cross section (Fig 1) A soft rubber collar is formed in the centre of the "top sheet" T This collar is closed by the clamp M Fitted in the wall of the collar is a glass cannula whose end outside the collar is connected with the inflow tube, and its end within the collar, with a tube leading to the bottom of the wound Another cannula, similarly fitted in the wall of the collar, has the outflow attached to it The under side B, the skin sheet, is of very thin rubber It adheres to the skin around the wound, a hole having been cut in this sheet a little larger than the wound opening, through which the wound cavity communicates with the interior of the bag

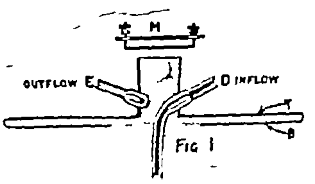

FIG 1

The wound is prepared by passing strips of rubber into any pockets that exist Their outer ends are tied together and cut flush with the skin These act as props to keep passages open, so that a positive pressure in the main channel of the wound becomes transmitted easily to deeper parts The rubber tube which is to be connected later with the proximal end of the inflow cannula is now passed to the bottom of the wound The skin is dried and painted with a solution of Canada balsam and rubber The drainage bag is then applied, the surgeon being able to see through the open collar that the hole in the skin-sheet is registering round the wound The tube in the wound is connected with the inner end of the cannula whose outer end connects with the inflow tube The outflow tube is connected with the outer end of the other cannula Both sides of the bag are then bandaged together and to the limb, leaving the collar protruding During irrigation the fluid extravasates between these sheets, exerting pressure which holds the skin sheet down the bandages serving as a *point d'appui* The sheet of rubber cemented to the skin round the wound constitutes a stop-valve, preventing leakage, any attempt of the fluid to escape beneath it being countered by its own pressure upon it When the outflow is clipped tension occurs in the wound relative to the height of the reservoir When the inflow is clipped siphonage creates negative pressure which is relative to the column of fluid from the bed to the floor

Report of Cases

Over 20 cases have now been treated with one form or another of this device with gratifying results Many of the wounds treated were shallow and uncomplicated by crevices but we have selected the following six cases for the opposite reason —

CASE 1—Corporal L—— admitted to Granville Special Hospital Excision of the knee had been performed following septic infection of the joint. For 12 weeks the discharge was most profuse Latterly the condition was less acute, but the sinuses which communicated with one another one on the anterior aspect of the knee and one on each side of the tibial tuberosity were most intractable to treatment The tissues for the last six weeks had been tender indurated, and swollen. The temperature at this time was normal, except for an acute flare up" every few days accompanied by a sharp rise Ordinary irrigation and moist dressings had been used for weeks with scarcely any change The drainage-bag was applied and the patient shown how to control the flow himself Eusol solution was run in and out for a few seconds every half hour After 24 hours, on opening the collar of the apparatus to examine the wound it was found that no pus could be expressed from the opening of, or along the track of the sinus. The tissues were healthier-looking and less tender to the touch The patient, who had complained of a dull aching pain in the joint from the first now volunteered the information that this had entirely disappeared. The apparatus was removed on the fourth day when a few drops only of serous discharge could be expressed from the anterior sinus The two lateral openings which communicated with the anterior were healed a week after the bag was removed, the anterior sinus exuding serum only for a week or ten days longer No recurrence of the infection occurred and a month later he was able to bear weight on the limb.

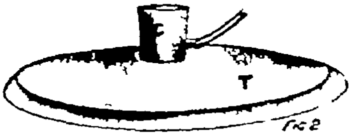

Fig 2

CASE 2.—Private J—— admitted to Ontario Military Hospital with a badly infected compound comminuted fracture of the left thigh and a tunnel wound through the upper end of the right tibia, also badly infected The patient was in a "typhoid state" with involuntary fæcal movements. The left thigh was amputated shortly after his arrival and at the same time the wound through the tibia was curetted and spoonfuls of black foul smelling cancellous tissue removed The end of the tibia appeared so friable that there was danger of breaking into the joint A split tube was passed through and through, a drainage-bag applied to each opening and irrigation instituted with pressure of a 3 foot column of fluid—Dakin's solution. The device remained effective for three days and was not reapplied Treatment was continued by merely flushing the solution through the wound It is difficult to draw deductions in this case on account of the accompanying condition but this ominous-looking wound took the right course instead of the wrong one the patient made a good recovery and he will have a good right leg as infection did not extend to the knee-joint

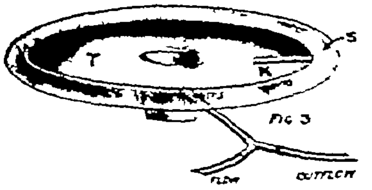

Fig 3

CASE 3.—Private S—— admitted to Granville Special Hospital with large discharging wound of thigh Very little improvement had been noticed in the past four weeks There was a deep sinus leading into soft tissues surrounded by an area covered with dirty greyish granulations discharging freely A drainage-bag was applied for seven days and eusol introduced under pressure every half hour during the day and every hour at night for the first 48 hours On removing the bag there was scarcely any discharge from the sinus, and the granulating surface was clean. Moist dressings were then applied daily In three days the sinus was closed and the surrounding area filling in rapidly with healthy granulations.

CASE 4.—Sergeant —— admitted to Granville Special Hospital with wound of upper arm, which had been discharging for the past six weeks with scarcely any change There was no sequestrum or foreign body Tortuous sinuses extending above and below the wound were indurated tender and of a purple colour The wound recently had become acutely inflamed the tissues around much swollen and discharging profusely the evening temperature was 102° Hot fomentations and ordinary irrigation produced little alleviation of these symptoms The drainage-bag was applied and hot hypertonic saline introduced every half hour under pressure the patient controlling the flow himself In 12 hours he was entirely free from pain, while tenderness and swelling were markedly reduced, the temperature was normal that same evening After two days the fluid came away clear though the intervals between irrigations had been increased The bag was removed on the fourth day all induration, redness, and tenderness having disappeared, the wound showing only a small amount of sero-purulent discharge A week later the sinuses were closing well they were perfectly pliable and free from oedema, a condition which had not obtained since his original infection.

CASE 5.—Private S—— admitted to Ontario Military Hospital with compound incomplete fracture of the femur There was a wound three inches in diameter on the anterior surface of the thigh leading to the medullary cavity through a hole in the bone. The thigh was tremendously swollen and very painful to the touch. There was profuse discharge, dirty brownish red in colour The patient's general condition was fair pulse quickened temperature 101° The surgeon in charge of the section thought possibly it was a form of gas infection and advocated multiple incisions of the limb but consented to give this scheme of drainage a short and summary trial. In two days the swelling had practically disappeared the discharge was lessened in amount and changed in character to a creamy-coloured pus Both temperature and pulse had improved, the case having lost the aspect of an acute condition

CASE 6.—Sergeant —— admitted to Granville Special Hospital with compound fracture of the femur and over riding of the fragments There was a sinus on the outer aspect leading inward between the fragments, also a wound below this leading into a large abscess cavity Both these wounds had been discharging profusely for six weeks or more The whole thigh from the lower third to the anterior superior spine was greatly swollen tender and oedematous. The temperature ranged between 99° in the morning to 101° at night, pulse 118 to 120 per minute The patient was despondent irritable and thoroughly miserable Latterly eusol had been injected into the sinuses but without pressure the fluid returning as easily as it went in. The temperature dropped to about 99° in the evening but did not fall below 99° in the morning and there was little if any change in his pulse-rate or in his general condition. The drainage-bag was then applied covering both wounds and the solution introduced, alternating positive with negative pressure Clipping off the waste-tube caused the collar of the bag to balloon up, while clipping the inflow caused its sides to suck vigorously together We inferred that to some extent the same thing was happening within the wound itself and to a lesser extent in the remotest reaches of the wound—i e tidal movements For the first 24 hours drainage was free, the fluid coming away loaded with pus At the end of 24 hours the evening temperature was normal for the first time for over six weeks The induration tenderness and swelling were reduced to a remarkable extent at this time At the end of 48 hours the fluid came away comparatively clear after each half hourly renewal of the solution On the third day owing to blockage of the sinus, there was a sharp rise of temperature and pulse-rate which as rapidly subsided when the obstruction was removed Two days afterwards the bag was taken off the temperature was below normal pulse 80 per minute and only a small amount of serous discharge exuded from the wound. The swelling pain and tenderness of the thigh had entirely disappeared the tissues were perfectly pliable and could be pinched up anywhere with the fingers Four days after the removal of the bag the lower wound was quite closed the upper wound closed a week later The immediate improvement in the general condition mental outlook appetite and well being of this patient was little short of astounding His pulse-rate which had been running from 116 to 120 per minute for over six weeks, dropped to 72 in a week from the commencement of the treatment There has been no recurrence of the infection

These cases at least are suggestive in view of the reasons propounded why 'active' irrigation should be more effective than "passive" Theoretically, the more inacessible the infection the more definitely should this plan disclose its relative worth And the theory appears to have been vindicated by the clinical course of cases with tortuous sinuses leading down to fractured bone The success of Carrel's method is due to the better distribution of the solution Liquid tight closure enables us to bring the fluid even more completely still in contact with the tissues

Improved Form of the Device

The device (Fig 1) that we have used in these cases stays watertight from three to five days at a time, after which its removal and its reapplication if the wound is not sufficiently sterile, is necessitated by leakage This is inconvenient, since the rubber is still quite adherent to the skin except along the track of a radiate wrinkle which has formed very gradually and through which the fluid escapes

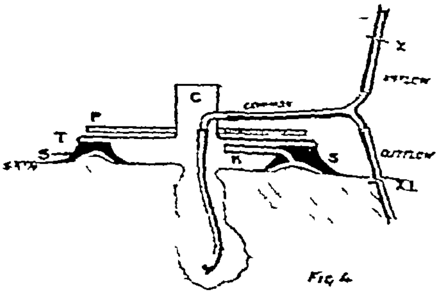

Fig 4

But the apparatus as we have it reconstructed now is much more dependable easier to apply, and the period of its effective use has been extended indefinitely

Fig 2 is a perspective view of the top side of the device Fig 3 shows the under side Fig 4 is a sectional view, and Fig 5 shows the device as it appears when bandaged to a wounded thigh

The same letters refer to the same parts The collar C and the top-sheet T are practically the same as before Instead of the skin sheet we have the "suction ring" S attached to the circumference of the top-sheet Round the under surface of S a gutter is formed, the sharp rubber lips on either side of which are designed to grip the skin A small tube, K, leads from the gutter to the space beneath the collar A valve on this tube lets air pass from the gutter and holds the suction by blocking its return The drainage-tube from the wound connects with a cannula in the collar, whose outer end connects with a common tube This common tube divides into an inflow and outflow a few inches from the collar by means of a Y piece There is a clip, X, on the inflow, and another clip XI, on the outflow

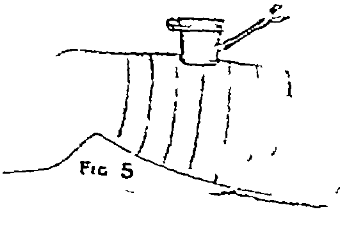
Fig 5

To apply, first paint the skin with a mixture of petrolatum, Canada balsam, and rubber dissolved in ether Petrolatum alone serves very well, but it attacks the rubber We do not want to cement the rubber to the skin as before, but merely to provide a "filling" to obviate the possibility of capillary leakage and to protect the skin These ingredients in equal parts make a soft elastic paste that is not too sticky The device is laid on so that the suction ring rests on sound skin with the wound more or less in the centre The washer P, of plastic felt, is now moulded to the suction ring and pressed down all round until the rubber lips make contact everywhere with the skin When the felt has hardened a little cotton may be tucked between it and the ring wherever contact of the lips is not perfect The ring is very flexible, and its attenuated lips can easily be made to conform to an irregular surface When the bandage is applied over all the air which is thereby expressed from the gutter through the small tube K cannot return on account of the valve Thus we have suction operative in addition to the pressure of the bandages, even before the irrigation is started After connecting the drainage tube to the cannula the collar is closed

To flood the wound close the outflow, when the fluid overflows and extravasates into the space between the top sheet and the top of the suction ring Here the pressure operates to force the suction ring against the skin, using the bandaging as a *point d'appui* as before This is additional to suction beneath the ring, which is still maintained by the valve

To suck the wound out, close the inflow tube and open the outflow, when siphonage aspirates the wound, collapses the collar, and renews the negative pressure beneath the suction ring through the tube K

When flooding a wound under pressure leakage is blocked by the same forces which, when a bath is filled, operate to draw the plug to the mouth of the waste pipe and hold it there—the weight of water above the plug and the column below it acting simultaneously

Several alternative procedures may be adopted in the intervals between the irrigations On the one hand the wound may be left distended, either with the outflow closed and the inflow open or the outflow almost closed and the inflow open, in which case the fluid dribbles slowly through the wound while positive pressure is maintained (If it is desired to have the flow thus continuous the connexion of the in and out-flow tubes with the collar will need to be as shown in Fig 1, which is perhaps the best arrangement in any case) On the other hand, the wound may be left collapsed, and either with the inflow closed and the outflow open or the inflow almost closed and the outflow open, in which case the fluid dribbles through whilst negative pressure is maintained A negative pressure persisting should encourage an outward flow of lymph

Or a dry wound may be had in the interval After siphonage the collar may be opened, when air replaces fluid as it gravitates toward the end of the drainage tube which is at the bottom of the wound The grip of the suction ring on the skin may be released by lifting the outer lip to permit the entrance of air

If the wound is a through and through one a similar device with its tube K, but unprovided with a collar, is applied to the lower opening Its suction ring is influenced, too, by negative pressure in the wound

Criticisms Answered

An objection that is often raised is that the wound is sealed -In the intervals between the irrigations, it is true, fresh fluid with its quota of oxygen is locked within the wound But the tissues can suffer no ill effects from this before the contained fluid becomes appreciably vitiated, which takes time And since bed flooding places no limit to the frequency of the irrigation, and the manipulation of a clip is all that it entails, it might at least be given often enough to obviate this objection Besides as just explained, the fluid may be allowed to dribble through the wound during the intervals between the flushings

Another contingency suggested is that separation of muscular planes, injury to the tissues pain, &c, might result from pressure of fluid in the wound Of course, pressure may be reduced to the vanishing point if desired, by lowering the reservoir But we are inclined to lay stress on the value of pressure

Taking pain as the criterion of the injury that pressure is inflicting, our experience has been that when the limb is snugly supported by bandages a four foot column of fluid may be borne without discomfort Nor have we found that any ordinary pressure is competent to separate muscular planes, and certainly not without pain as a warning symptom It goes without saying that pain is not allowable in any case

If pressure in a wound causes injury it must do so not by direct compression of the tissues but by distension—actual stretching of the walls of the wound It is distension certainly that causes pain, for it is not found that submersion of an inflamed member to a depth of two or three feet produces pain The larger the wound cavity the greater the area exposed to a given head of pressure, and the more forcibly the tissues are stretched by it Bandaging checks undue distension of the larger spaces of a wound, yet allows the fluid to enter subsidiary crevices in which infection is prone to lurk, yet which on account of their diminutive size are less sensitive to distension

Mouths of pockets may have become agglutinated, and it is, we think, the disintegrating action of pressure and suction that carries the wall and allows the solution to penetrate, rather than the action of pressure alone This "activity" of the irrigation promotes the mechanical washing of bacteria from the wound, and may explain the rapid clearing up of certain wounds which we have observed from the employment of solutions whose antiseptic value is negligible.

Another theoretical fear is that protective barriers might be broken down, causing the infection to spread The answer to this is that it has not done so, that, on the contrary, infections have been rapidly controlled The positive pressure in the wound is momentary In the intervals between the irrigations negative pressure should facilitate an outward flow of lymph Yet the volume of fluid used and the frequency of the irrigations should maintain the concentration of the antiseptic unimpaired

We hesitate to call this a modification of Carrel s method, of which already there have been too many It is true nevertheless that the use of our device implies no departure from his teachings On the contrary, it allows the doctrine of prolonged and intimate contact with every portion of a wound, by a solution whose concentration remains constant, to be more consistently applied

Summary

This whole question seems full of interest, and of promise for the treatment of wounds Tentatively, at least, we may summarise its advantages as follows —

1 Alternate tension and collapse in a wound providing deeper penetration of the solution employed and more perfect oxygenation of the tissues

2 A constant degree of concentration of the solution in the wound

3 More thorough mechanical removal of pus cells and bacteria from the wound

4 An outward flow of lymph

5 Economy of time and effort with ability to irrigate wounds more frequently

6 Elimination of the personal equation, the height of the reservoir and the opening and closing of a clip comprising practically all the instruction to be given or remembered

7 Inspection of the wound without undoing the bandages, by simply removing a clamp from the collar

8 The possibility of keeping an absolute record of the progress of an infection The washings of the wound for any given period containing all the pus cells and bacteria collected by the wound during that period, which could be counted and compared with any subsequent period

9 Saving of material—gauze and cotton—should more than counterbalance the cost of the device, which could be used over and over again

10 Comfort and sense of dryness enjoyed by the patient

11 For obvious reasons it would appear to offer an ideal method of treatment for use on ambulance trains

12 It is not suggested that this device should be employed in the shallow type of wound, where the ordinary methods suffice, but in wounds that are deep and inaccessible It would seem to promise most in compound fractures of the femur

We wish to express our gratitude to Surgeon General Foster C B, Director of Medical Services, Canadians for the facilities accorded us to carry out this work, and to Lieutenant-Colonel G E Armstrong, consultant to the D M S, whose interest in our scheme has been most helpful We are indebted likewise to Colonel D W McPherson and to Lieutenant-Colonel J T Clark, the officers commanding respectively the Ontario Military Hospital and Granville Special Hospital, for permission to report these cases

AN OPERATION FOR THE RADICAL CURE OF INGUINAL HERNIA

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ANY successful operation for the radical cure of inguinal hernia must aim at re forming the damaged inguinal canal, making it "narrower and more resistant to abdominal pressure than the original canal had been"[1] The operation I am about to describe has the additional aim of re-forming the stretched internal abdominal ring

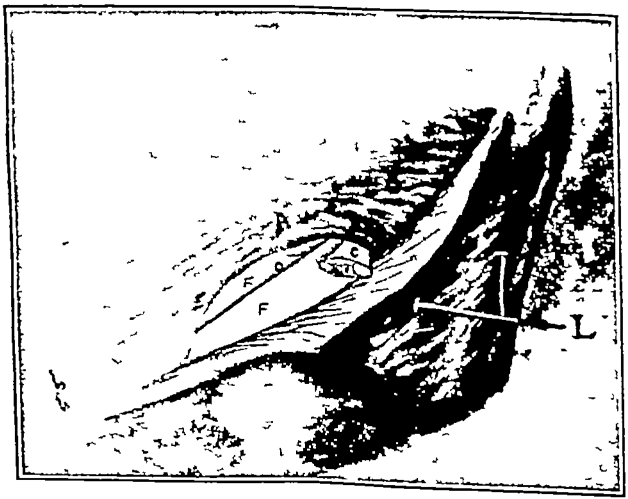
I should like, first of all, to refer to a few important points in the normal and pathological anatomy of the inguinal region

In the inguinal region the fascia transversalis stretches from the lower border of the transversalis muscle to Poupart's ligament to form the fascial floor of the inguinal canal. Half an inch above the mid point of Poupart's ligament the spermatic cord leaves the abdomen surrounded by the infundibuliform fascia. Normally a small well-defined ring can be demonstrated where the infundibuliform fascia leaves the fascia transversalis This constitutes the internal abdominal ring During abdominal strain the strong internal oblique muscle supports this fascial ring and reinforces the fascial floor of the inguinal canal

The pathological conditions accompanying a hernial protrusion are 1 A stretching of the fascial internal abdominal ring and fascial floor of the inguinal canal The ring enlarges in an inward and upward direction until it eventually overlaps the external abdominal ring 2 A resulting upward displacement of the muscles which are inserted into the conjoined tendon. 3 A stretching of the aponeurosis of the external oblique

In the present writer's opinion the importance of repairing the defect in the fascia transversalis in an operation for the radical cure of an oblique inguinal hernia has never been fully appreciated In this region, as elsewhere, the fascia transversalis must be looked upon as part of the extra peritoneal fascial envelope of the abdominal cavity A post-operative defect in this fascia, especially if it be left unsupported by strong muscles, invites a hernial protrusion. Therefore any operation which leaves a large or unsupported defect in the fascia transversalis or interferes with the support which the internal oblique muscle normally affords in the inguinal region must fail

FIG 1



A. Black dotted lines indicate edge of transversalis muscle D Dotted ring in position of internal ring C Cord &c. cut away to show underlying structures D Line of incision in fascia transversalis E, Conjoined tendon F Fascia transversalis L, Fascia lata.

[illegible]

1 The inguinal [illegible]

2 The [illegible]

3 The [illegible]

[illegible]

A. C[illegible]

4 The [illegible] the conjoined tendon [illegible] divided parallel to Poupart's ligament [illegible] not to injure the deep epigastric [illegible]

5 The fascia [illegible] the [illegible] the conjoined tendon [illegible] to expose the deep [illegible] ment

6 The [illegible]

7 Mattress sutures ([illegible]) are [illegible] fascia and [illegible] of Poupart's ligament. The [illegible] is introduced first. [illegible] fascial [illegible] restored [illegible] the internal [illegible] retracting Poupart's ligament. By carefully passing the [illegible] emerge [illegible] Poupart's ligament [illegible] to the fascia lata [illegible] are easily and safely [illegible] important that the [illegible] versalis [illegible] and the cord [illegible] the structures [illegible] if this fascia is [illegible] Poupart's ligament. [illegible] suture nearest the [illegible] must be taken not to [illegible] never seen pressure symptoms [illegible] the re-formed internal abdominal [illegible] tip of one finger

8 The cord is allowed to [illegible]

9 The external oblique [illegible]

10 The wound is closed [illegible]

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[1] Binnie: Operative Surgery

BLOOD PRESSURE AND SURFACE TEMPERATURE IN 110 CASES OF SHELL SHOCK

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THE cases were Expeditionary Force men, and the examination was made on admission and at regular intervals through the man's stay in hospital

Observations on Blood Pressure and Condition of Patients

It was found that 55 men showed on admission a pressure below 120 mm Hg, and of these 25 were between 88 and 110 These were the severe cases of shell shock. Of the other 55, 28 were between 130 and 150 mm Hg, and 27 between 120 and 130 Of those above 130 only 4 were severe cases With the exception of 8 men, all showed subnormal surface temperature, varying from 18° to 31 5° C The temperature was taken in the hand with a surface temperature thermometer, the temperature of the air and a healthy control being noted at the same time

All of the cases with a very low blood pressure were suffering from dreams which woke them in a state of terror, sweating, and trembling Their hands were dusky and clammy, and most of them had a tremor They showed a marked fatiguability and irritability, most of them were depressed and showed a great lack of self confidence and initiative , all suffered from headache On admission nearly all had dilated pupils

Of the men with a blood pressure above 120 only 10 complained of nightmares, and in these the signs of fear were not so well marked as in the cases with a low pressure. In all cases, whatever the blood pressure, headache was a common symptom

An improvement in the general condition was coupled with a gradual rise of pressure This is shown in Chart 2, which is a typical example At the same time the dreams became less terrifying and there were fewer signs of fear In some cases which had shown a return of symptoms—such as nightmares, tremors, headaches, or had some cause for considerable worry—it was found that there was a drop in blood pressure at the same time This is also shown in Chart 2 In most cases there was a rise of surface temperature as the general condition improved, though any subsequent fall in surface temperature or blood pressure did not always coincide

No case showed any organic lesion, and the urine was normal

As a gradual rise in blood pressure was found to coincide with general improvement in condition, pituitary and thyroid extract were given in order to see whether a general improvement could be obtained more quickly

An interesting point was the almost constant relationship between the low blood pressure and terrifying dreams It seems as though the vaso-motor disturbance which was produced at the time of the shock was rendered more or less permanent by the constant repetition in dreams of his former terrifying experiences At the same time the low blood pressure caused a cerebral anæmia and lessened mental and physical activity, which prevented the man from throwing off the effects of his imagination—thus a vicious circle being produced A gradual or rapid rise of blood pressure in nearly every case was accompanied by a change in the character of the dreams, the terror element being less marked

Results of Treatment

Treatment with pituitrin —This was tried after general treatment and other drugs had failed Twenty cases were treated with pituitary extract 15 were watched for some weeks, 5 improved very rapidly and were sent to convalescent homes before full notes could be taken Chart 1 shows progress in 10 cases

It was given (1) as pituitary fluid 0 5 c c b d as an injection , (2) as ext pituitrin gr ii t d s Better results were obtained from extract Five patients who were given injections complained of dizziness afterwards, no case treated with extract complained Administration was followed by an immediate rise in blood pressure—in one case from 100 to 122 There was a marked improvement in appearance, less depression, less headache, greater feeling of well being less fatiguability Eight cases complained of polyuria (5-6 pints of urine a day) The pituitrin was discontinued until the amount of urine became normal and then was given once a day

A slight drop in blood pressure was noticed in 6 cases when pituitrin was discontinued but not to the original level

Three of the most marked cases were given other pills instead of pituitrin for 2-3 days to eliminate suggestion as a cause or factor in the improvement In 2 cases there was a slight return of headache and the men did not feel so well

The pituitrin was given to one man with a blood pressure of 150 who was suffering from marked depression headache insomnia, stammer, and nervousness After three doses the headache and depression were markedly improved , he showed more self confidence , his blood pressure dropped to 130 He attributed the improvement to the new treatment, and when the supply of pituitrin gave out it was noticed that he relapsed The drop in blood pressure was not noticed in any other case, and this case is merely quoted because it was unique

Treatment with Thyroid Extract —This was given in doses measuring from gr ¼ to gr i t d s to 20 cases In 13 cases improvement was noticed, a gradual rise in blood pressure and lessening of headache being produced Coupled with pituitrin the effect was more rapid

No other gland extracts have been used

Histories of Cases A to K (explaining Chart 1)

A.—Lance-Corporal R H aged 26 (also Chart 2) Out to France February 1916 feeling very fit On July 1st he was blown up by a shell He has a faint recollection of crawling out of some water but remembers no more until he found himself in a dug-out, dumb, partially deaf and blind for a few minutes.

When admitted to Maudsley Hospital on August 17th he was mute his hearing was normal there was slight left facial paralysis. His hands were very dusky sweating cold and slightly tremulous His dreams were very marked he used to wake sweating and terrified after going through a pantomime of bomb-throwing He had headache and was depressed Blood pressure and surface temperature were subnormal he was always complaining of feeling cold.

Sept. 25th He was able to speak in a whisper His other symptoms were improving slowly His dreams were still frequent but less terrifying

Nov 25th-28th All his symptoms returned after hearing of the death of his brother in action Put on ext. pituitrin gr ii t.d.s This was followed by an immediate rise in blood pressure, together with marked general improvement less headache and depression His bomb-throwing still persisted but he was much less exhausted on waking After seven days treatment his surface temperature began to rise and he himself noticed that he was much warmer

Pituitrin was discontinued after one month s treatment but the improvement persisted

He was boarded out of the Army in February and wrote in March saying that he was still feeling better

B —Sergeant J K aged 34. Blown up by a shell in November 1916 (Had been in India in 1908 and suffered from malaria) On admission he complained chiefly of suprаorbital and vertical headache, together with dizziness His blood pressure was 104 and dropped to 92 when he was put on pituitrin There was an immediate improvement in headache blood pressure rose to 98. There was polyuria (6 pints) and the dose was given once a day only The headache continued to improve and he was sent to convalescent home and later to his depot

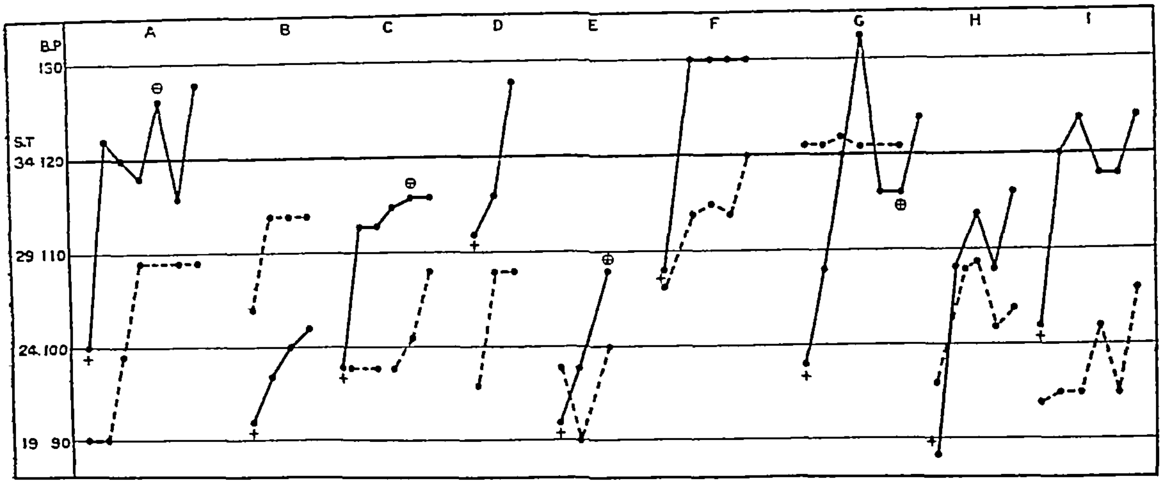
C —Gunner J W aged 25 In October 1916 while helping to lift ammunition fell down with severe pain in lower part of back On admission to Maudsley Hospital he complained of severe occipital and temporal headache He was troubled with nightmares and was very neurasthenic. While in hospital he became tremulous on excitement and his headache increased He was given pituitrin which raised his blood pressure from 98 to 114 and improved the headache. The blood pressure remained up when the pituitrin was discontinued but he remained neurasthenic Boarded out.

D —Gunner D aged 22. After 25 months service in France he was buried in a dug out, when his gun blew up in October 1916 On admission he had marked vertical headache his hands were dusky and tremulous and his pupils were widely dilated He had nightmares After one week s treatment with pituitrin his headache was much improved Sent back to depôt

E —Private D B aged 19 Patient had to go sick as result of barrage on Nov 18th 1916 On admission he had cold blue hands sweating body feeble pulse blood pressure of 92, terrifying dreams as soon as the light was put out at night. His general condition improved with pituitrin, but the supply gave out and he was sent to convalescent home

F —Private T aged 29 Admitted to Maudsley Hospital in July 1916, after being blown up on July 1st with marked tremor general exhaustion and signs of fear He had seen service in Gallipoli Egypt and France Patient improved up to the end of July and then he began to be troubled by nightmares, chiefly of aerial torpedoes. His state of fear was very marked and persisted until the end of September when he began to improve He was better up to November when he became much worse. He complained constantly of headache his sleep was disturbed by nightmares and he had loss of appetite His blood pressure was 98-103 After pituitrin there was immediate improvement. Sleep appetite and general condition all improved. Dreams persisted but were less worrying In this case the supply of tabloid form gave out, and he was given injections He complained of dizziness after these and it was noticed that he was much better after the solid form.

CHART 1



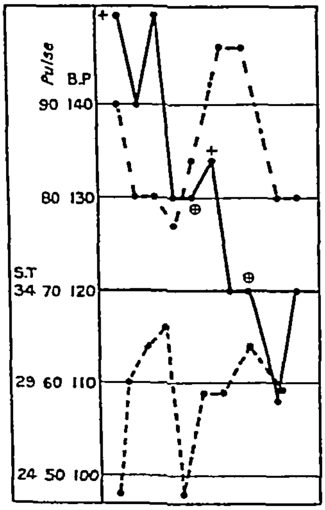
A—I Showing the effect of pituitrin on the blood pressure and surface temperature Each dot is one week s interval + is the pressure when the first dose was given ⊕ is the point at which the pituitrin was discontinued

G —Private N., aged 35 Admitted to Maudsley Hospital in April 1917 suffering from amnesia for whole of Army life, depression, marked occipital headache and slight confusion. He was put on pituitrin after general treatment had failed There was an immediate rise in blood pressure together with a marked lessening of his depression and general debility He complained a little of dizziness after injections and had polyuria (5 pints) and was given extract instead of injection. The amnesia persists but the general condition is still improving

H —Private D H aged 26 Suffering from acute confusional insanity following mumps and measles. Family history of insanity Blood pressure only 88 Hands nose ears and feet very blue and cold He was given pituitary fluid with an immediate rise in blood pressure and slight general improvement. Ten days later he was given pituitary and thyroid extract, but there seems to be no real improvement (There has not been sufficient time to watch for any further change)

J —Sergeant I L. aged 22. Sent back from Germany where he had been prisoner for 15 months as insane" He was in Giessen Asylum for 7 months. August 16th 1916 Admitted to Maudsley Hospital markedly depressed and lethargic. In October his general condition showed improvement but he still had periods of depression He was put on thyroid extract and in December he was given pituitrin. January 1917 No longer depressed or lethargic. (He complained of pain in his back, which was found to be due to a bullet this was removed)

CHART 1 K



Shows the effect of pituitrin in a case of high blood pressure

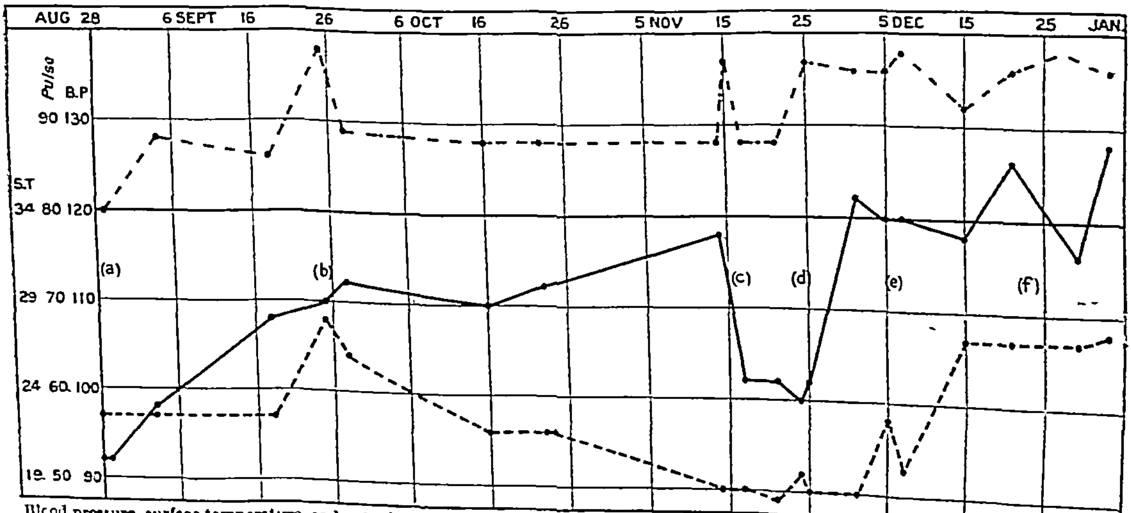
—— = Blood pressure
— — — = Surface temperature
- - = Pulse

K —Bombardier A aged 31 Admitted to Maudsley Hospital on Oct. 30th 1916 after 19 months active service suffering from headache and depression Blood pressure 150 He had similar attacks before joining Army Patient s headache did not improve under treatment, and on Dec 3rd he was given extract pituitrin, in spite of his blood pressure In two weeks the blood pressure dropped from 150 to 130 and there was less headache and depression and more self-confidence. Treatment was discontinued for one month and during this time patient again became depressed and tremulous Pituitrin was again given with improvement Blood pressure 120 Sent to convalescent home

In this case extract pituitrin improved the headache and was accompanied by a drop in blood pressure and polyuria.

The work was undertaken at the suggestion of Major F W Mott, R A.M C (T) who had already made some observations on the same subject, and who was in charge of the men, and to whom I am indebted for help and permission to publish the results The instrument used was Rogers's sphygmanometer, manufactured by Short and Mason Limited It was found that this could be manipulated more quickly than the Riva Rocci instrument, which was used for a time and from which the same results were obtained

CHART 2



Blood pressure surface temperature and pulse in a case of functional mutism (a) On admission troubled by nightmare (b) Able to speak in a whisper (c) Much depressed after bad news (d) Put on pituitrin (e) Marked general improvement (f) Taken off pituitrin

FRACTURED BASE OF THE SKULL

THE SUBSEQUENT HISTORY OF A CASE AND ITS TERMINATION 24 YEARS AFTER THE ACCIDENT

By J B CHRISTOPHERSON, M A, M D Camb, F R C P Lond, F R C S Eng,
DIRECTOR OF THE CIVIL HOSPITALS OF KHARTOUM AND OMDURMAN

With Bacteriological Note by Albert J Chalmers, M D Manch, F R C S Eng, D P H, *Director of Wellcome Tropical Research Laboratories, Khartoum*

It is not often that we can follow up a case of fractured base terminating 24 years after the original accident from the direct effects of the injury

One Sunday in March, 1917, I was asked to see an old gentleman of 65 at Khartoum, complaining simply of feeling a little giddy and of some discomfort below the occipital region of the head—nothing more He had a temperature of 104° F Next day (Monday) he appeared neither better nor worse He became unconscious and apoplectic on Tuesday, and did not recover consciousness before he died on Wednesday morning at 6 o clock

Account of the Case

The complete story was this Nearly 24 years ago (summer, 1893), whilst out riding he was thrown, and received a fractured skull He remained unconscious for two weeks, finally recovering, but with the loss of smell and taste He appeared to recover completely, excepting that any worry or extra exertion made his head ache at the back, this, however, was always put right by a day in bed and the administration of a little aspirin

He was a popular pleasant, cultured man, with a good memory, and a well known artist, who, during the war, had patriotically resumed his former business profession and was actively engaged in it at the time of his death He possessed all his faculties (excepting taste and smell) until 24 hours before his death In fact, four days before his death he was apparently in the best of health and spirits, as an active man of 65 should be, and he looked no older than 55, if as much

At the time of his death he was at Khartoum, a long way from England, the place of his accident of 24 years before The day on which he was first taken ill would be considered hot for any other place but Khartoum, but not unpleasantly hot for Khartoum at that time of year (the month of March) The maximum temperature on that day was 96 4° F , the minimum on the previous evening had been 64 8° He first noticed something amiss after he had walked along from his hotel to the club and back a distance of over a mile

At the club he had looked at the papers and had gone to sleep on the verandah He had walked back in the afternoon to his hotel, but was noticed on his return there to be unsteady in his gait Feeling unwell, he walked to see a doctor who lived a quarter of a mile away, not finding him in he returned to the hotel and went to bed He was seen in bed by the doctor at 9 o'clock on the same evening He had a temperature of 104°F , and the only thing he could definitely complain of was a feeling of discomfort which he located below the occipital region of his head It is necessary to remember this because subsequently it was found that he was suffering from a small abscess in his frontal lobe There were no other physical signs of illness, and he talked intelligently and with a good memory for events recent and remote and chatted of mutual friends of 20 years ago

When seen the next morning he appeared to be neither better nor worse, and it was supposed that whilst sleeping on the club verandah he had got "a touch of the sun" He really was suffering from a cerebral abscess in the frontal lobe and commencing convex meningitis, but this was not suspected at this time

He was seen at mid day and again at night The temperature being no lower (104 8°), it was resolved to take him into hospital in the morning, he had so far only been a little more than 24 hours ill The next morning at 6 o'clock he became comatose after getting out of bed, and passed into an apoplectic condition, struggling and breathing with considerable stertor and stridor Ice was applied to his head and he became quieter, he was removed to hospital but he never recovered consciousness

The only additional symptom noticed was inequality of the pupils, the right being fixed (The abscess was on the right side) He died 24 hours later, 84 hours after the commencement of his last illness

Necropsy

A post-mortem examination was made

The whole of the convex surface of the brain and the inner surface, that in relation to the falx cerebri, was invaded by a purulent meningitis which appeared to travel along the line of the big vessels The medulla oblongata and the spinal cord were quite free and there was no meningitis of the base at all, nor did it extend to the spinal cord, nor was the pus of the gelatinous greenish yellow appearance which one associates with the meningococcus of Weichselbaum It was not, in fact, a cerebro-spinal meningitis anatomically

On getting out the brain there was some difficulty in removing it from the right anterior fossa, and on examining the under aspect of the right frontal lobe there was a distinct thickening of the covering membranes which concealed the not very large abscess—a thumb nail would cover it—shown in the figure

I took out a wedge of skull to include the cribriform plates and neighbourhood of the anterior fossæ and found that the dura mater was thickened, and that this had been the seat of an old injury, and I thought that probably the abscess had originated through infection passing through a damaged cribriform plate of the ethmoid

The other organs were quite healthy

Causation

I wrote to his relatives and asked whether he had ever had an injury to his head and they replied that 24 years previously he had fallen from his horse whilst riding, injured his head, and remained unconscious for two weeks His recovery had been slow but apparently complete except for the loss of smell and periodical attacks of occipital headache when he over exerted himself These attacks were cured by a day in bed and a little aspirin There can be little doubt that an abscess had formed at the site of a fractured base and that it was the extension of infection from this along the lines of the great vessels that had caused the illness of the four days previous to his death

But when had the abscess formed? It was adjacent to the old seat of fracture, and it may be assumed that it was a consequence of the fractured base, whether it commenced immediately after the accident, or developed later, it is impossible to say Judging from the appearance and from the thickening of the dura mater about it, I should say that it was of long standing, and being in the "silent portion" of the brain it gave rise to no symptoms until it was accompanied by meningitis

The occasional slight attack of indisposition and pain in the head, cured by aspirin and a day in bed, were, may be small attacks of meningitis, the inflammatory process spreading beyond the confines of the abscess and becoming checked by suitable treatment

The micro-organism found not only in the pus but also in the abscess wall deserves mention, and I cannot do better than refer to the note which my friend Dr Chalmers most kindly made for me

Pathological report—"The sections of the frontal lobe of the brain contain Gram positive diplococci in chains, some of them having a Gram negative element"

For further details see Dr Chalmers's note at end of this paper

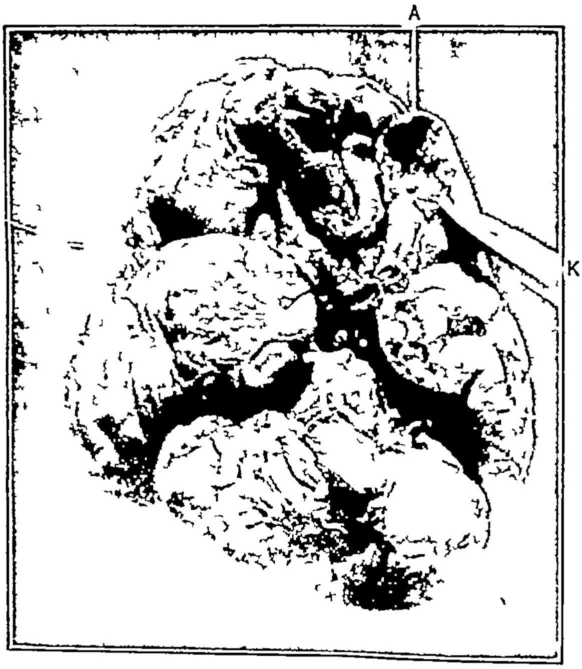
Remarks

In the "silent" regions of the brain, when dealing with the subject of cerebral abscess, the well known text-book of Osler says, "where the abscess becomes encapsulated there may be no symptoms" but it appears to me to be remarkable that this abscess had lain dormant, slowly forming, perhaps for years, had not even affected consciousness, or intelligence, or character, also that during the last four days of his life, when the local abscess became a general convex meningitis, there should have been only a high temperature and slight occipital headache, followed by apoplectic symptoms for the last 36 hours

The case deserves recording, I think, as a far reaching effect and far off termination of a fractured base I do not think that there can be the slightest doubt that the fracture through the right cribriform plate of the ethmoid gave entrance to the meningococcus which was neither Gram-staining nor non Gram staining That this meningococcus—not Weichselbaum's—produced an abscess in the under aspect of the right frontal lobe which was chronic and of long standing, that owing to the climatic conditions of the Sudan the meningococcus suddenly and rapidly spread all over the convex portion of the brain and involved the meninges of the vertex in a purulent meningitis which probably commenced four days before death

These are the facts Now for the reflections

1 It is unwise to prognosticate in cases of fractured base of skull. A fractured base of skull though apparently recovered from, is still a very serious thing It would seem that a man may live for 24 years and be none the worse to all appearances and may then die from the direct effects of his fractured base



From a photograph of the base (under aspect) of the brain showing the site of the abscess (A) and the knife-blade (K)

2 That the whole convex portion of the brain, including inner surfaces and the upper surface of the cerebellum, may be in a condition of progressive purulent meningitis and give rise to no definite signs except a temperature of 104° F and a little occipital discomfort and later a fixed right pupil and 24 hours before death unconsciousness and an apoplectic condition terminating in death without meningitis being so much as thought of

There is found out here in the Sudan and elsewhere a meningococcus both positive and negative in its Gram staining properties and which is not the meningococcus of Weichselbaum, and which is named by Dr Chalmers *Streptococcus janus crassus*

Could anything have been done for such a patient to relieve the abscess? I think not Its presence was not suspected, there were no localising symptoms, and it was not very accessible to operation if it had been diagnosed Whatever pain he had was in the occipital region, the abscess was in the inferior frontal portion of the brain He probably had it for a considerable time previous to his death perhaps for years and yet although situated in the frontal lobe on the inferior surface he had 'pain at the back of the head when he had worry or extra exertion

And finally a micro-organism such as this meningococcus when limited to its native habitat—in this case a smallish localised abscess—may remain harmless for years, but passing beyond these limits it may assume an acute and dangerous pathogenic state In this case passing from the abscess to the meninges it assumed a rapidly spreading and fatal character One may compare it to pathogenic organisms found constantly on the mouth tonsils or nasal mucous membranes quite harmless whilst they remain localised but by chance becoming transferred to more favourable media—meninges, lungs, other organs—they become virulently pathogenic

Bacteriological Note by DR ALBERT J CHALMERS

With reference to the Gram negative, Gram positive diplococci found separate and in chains in this case, organisms of a similar nature have now been met with several times in the Anglo-Egyptian Sudan They were first found by me in two cerebro-spinal contacts in Omdurman in 1913 later in a case of tonsillitis, then in a case of cerebro-spinal meningitis, then in a case of severe tonsillitis which was followed, after an interval of several days, by a scarlet-fever like eruption associated with desquamation and in a contact of that case, then in several other more or less severe cases of tonsillitis, of which the worst was followed by a scarlet-fever like eruption associated with desquamation Finally I have obtained an organism of this group from the blood of a case of septicæmia

I am inclined to the belief that the first time any of the organisms were recognised was by Jaeger in 11 cases of cerebro-spinal meningitis in Stuttgart in 1895, and I am also of the opinion that Jaeger's organism is the same as that named *Diplococcus crassus* by von Lingelsheim in 1906, and if so then it is the same organism as that found by myself and Captain O Farrell, R A.M C, in 1916[1] in a case of fulminating cerebro spinal meningitis in Omdurman because the two agree in cultural characters and in sugar reactions

According to the way I look upon the genera of the family *Coccaceæ* subfamily *Streptococceæ*, these organisms belong neither to the genus *Diplococcus* nor to the genus *Streptococcus* but to an intermediate genus, for which I suggest the name '*Janus*,' owing to the organism being both Gram-negative and Gram positive and differing in its cultural characters and chemical reactions from *Neisseria intracellularis* (Weichselbaum 1887), as set forth in the paper indicated above, and *Diplococcus crassus*, von Lingelsheim, 1906 would therefore become *Janus crassus* (von Lingelsheim 1906), and should be considered as identical with the organism which has been found in a case of cerebro-spinal meningitis and in contacts therewith and in carriers in the Anglo-Egyptian Sudan

The cultures kindly sent me from the above case were unfortunately contaminated, being obtained by post-mortem examination These contaminative organisms killed the other growths before I could separate them, but both they and the brain showed the presence of a Gram negative Gram positive diplococcus arranged in chains, and I am of the opinion that in all probability the organism in this case was *Janus crassus* (von Lingelsheim 1906) though of course definite proof is lacking

UNUSUAL RENAL CALCULI WITH SEVERE HÆMORRHAGE AS THE ONLY IMPORTANT SYMPTOM

BY JOHN D MALCOLM, M B, C M EDIN, F R C S EDIN,
SURGEON TO THE SAMARITAN FREE HOSPITAL.

THE very slight degree of pain and the close resemblance of the 18 small faceted stones to gall stones seem sufficiently unusual to make a note of this case interesting

A woman, aged 41 the mother of three children, the youngest born on April 7th, 1917, was healthy until her last confinement. Recovery from this was not good, but Dr G H Mitchell informs me that feebleness was the only symptom, and that nothing abnormal was observed in the urine at that time Six weeks after the child's birth it was noticed that the mother's urine was of a bright red colour, which continued with increasing weakness until, early in July, the patient fainted She had no pain and said she had not suffered in any way except from weakness, but later she allowed that for about seven years there had been an occasional stitch and dragging in her side on account of which she wore a very strong corset She insisted that the pain was nothing to complain of

On admission to the Samaritan Free Hospital on July 11th her lips were almost as white as the rest of her face The urine contained much blood thoroughly mixed with it The inner side of the right kidney was easily felt and very hard, but it was not tender An X ray examination showed a large shadow in the *right kidney* region and a small one near the bladder in the line of the right ureter

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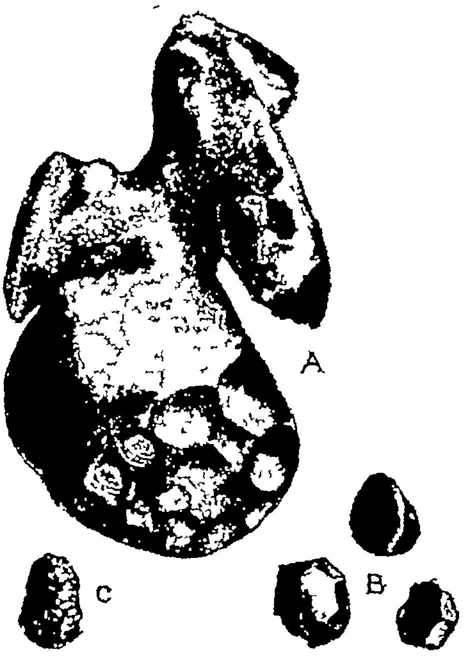
[1] Vide Journal of Tropical Medicine and Hygiene May 1st and 15th

Calculi were diagnosed, but the combination of so much hæmorrhage with so little pain suggested that possibly there was some further disease I *therefore* opened the abdomen on July 20th to examine both kidneys, as removal of one might be thought advisable The left seemed a little firmer than usual, but was otherwise normal In the lower *end* of *the right* kidney many stones were felt moving on each other like gravel The ureteric calculus was also identified close to the broad ligament

The right kidney was brought out on the loin through a second incision with considerable difficulty on account of old adhesions to the peritoneum, and the latter was torn in the process of separation This kidney contained the large stone shown in the figure (A) Its various rough projections occupied different calyces The large smooth, rounded portion, part of which is faceted and 18 small faceted stones lay in a dilated calyx at the lower end of the kidney An average three of these small stones are shown (B) Many of them have one rounded surface which *evidently* was in *contact* with kidney substance *There* were few, if any, more than a single layer of these stones all, *or* nearly all, being in contact with the large one The renal calculi were removed through an incision into the lowest calyx slightly extended to release the branches *of* the big stone, one of which, not shown in the figure, was broken but came out entire The bulk of the renal tissue was healthy and no other disease was *found* A single suture closed the more fleshy divided part of the kidney, the thinned wall of the lower calyx being left unsecured The loin wound, except where an opening for drainage was left, and the tear in the peritoneum were carefully closed



A Large renal calculus B 3 of 18 small renal calculi C ureteric calculus (Natural size)

Through a third incision in the right groin the peritoneum was separated down to the ureter, a snick in which released the small rough stone shown in the figure (C) One catgut suture closed the opening The left hand in the peritoneal cavity was of the greatest assistance in locating and bringing into view the ureter and stone The groin wound was closed except for the presence of a drainage tube, which was removed on the third day The anterior incision was closed and union by first intention took place in all the wounds except at the points of drainage

There was very little discharge from the kidney, and no urine was detected in this discharge at any time by sight or smell The drain was gradually removed Hæmaturia ceased after four days but some albuminuria continued The patient was sent to the Samaritan Free Hospital Convalescent Home on August 11th, still very weak but making blood fast There was then only a small superficial wound unhealed in the loin

Wimpole-street, W

Reviews and Notices of Books.

Tumours, Innocent and Malignant, their Clinical Characters and Appropriate Treatment By Sir JOHN BLAND-SUTTON, LL D, F R C S Eng, Surgeon to, and Chairman of the Cancer Investigation Committee of the Middlesex Hospital, &c Sixth edition With 383 illustrations London Cassell and Co, *Limited* 1917 *Pp* 790 Price 21*s* net

ON its first appearance in 1893 Sir John *Bland* Sutton's book on tumours at once established its reputation as an authoritative and suggestive work on a subject of widespread interest and it has long achieved the position of an English *medical classic* From the preface to this the sixth, edition we learn that so long ago as 1885 Sir John Bland-Sutton began to collect material for his study of tumours and it is well known that he has retained his interest in the subject The successive editions of his book show how much enthusiasm and original thought he has devoted to it One of the features which have rendered this book *so interesting is* the manner in which it is illustrated by references to tumour growth in animals Sir John Bland Sutton points out the value of comparative pathology in elucidating some of the obscure problems in connexion with tumours, and his own profound knowledge of this subject has been in many instances applied suggestively with good results He admits at the outset that no one has succeeded in framing a satisfactory classification of tumours, and he adopts a histological classification as most convenient for purposes of description—viz, tumour diseases of the connective tissues, tumour diseases of teeth, epithelial tumours, endotheliomas, tumours arising from the fœtal membranes, teratomas, and cysts This classification at least has the merits *of simplicity* and convenience and involves no theoretical assumptions. Each group is then considered separately, and one or more chapters is devoted to a consideration of each variety in the group Among the connective-tissue group we need only mention the description of uterine fibroids, which, as might be expected, is a most interesting and instructive one, profusely illustrated by woodcuts of important specimens almost entirely from the author's own experience. Referring to the difficulties of accurate diagnosis in these cases Sir John Bland Sutton has framed some aphorisms on pp 228–229, in the mánner of Agur the Sceptic, which embody in convenient form some useful cautions.

To appraise a work on tumours one would naturally turn to the description of cancer and judged by this criterion Sir John Bland Sutton does not fall short His chapter on the cause of cancer gives within short compass a summary of the two chief theories the embryonic and the parasitic points out the great difficulties of the whole problem, and counsels patience and persistence in dealing with it The epithelial tumours are then dealt with according to their regional incidence the clinical characters and treatment of each form being succinctly and critically presented Among the other sections which are worthy of special mention we may refer to those on teratomas and dermoids which are both dealt with in an instructive and clear manner Sir John Bland Sutton writes well and is always happy in his allusions and illustrative similes We have read this new edition of his book with great interest, and can commend it to our readers

JOURNALS

The Journal of Physiology Edited by J N LANGLEY, Sc D, F R S Vol LI, No 3 Cambridge University Press. 1917 Pp 111–210 *Price* 6*s* 6*d* —The Metabolism of Arginine, by W H Thompson This is the third communication by the author on this subject and deals with arginine and creatine formation *Dogs* birds and rabbits were used Arginine carbonate given with food to dogs and ducks increased the output of total creatine in the urine. On the excretion of preformed creatinine the addition of arginine to the food in dogs and birds produced no effect Intravenous injection of arginine increased the creatine of rabbit's muscle which corresponded on the average to a storage of 14 5 per cent of the guanidine. From the experiments on rabbits it would seem that after arginine is injected into the circulation a portion of its guanidine nucleus is converted into creatine, some of which is stored, for a time a least, in the muscles, and part excreted in the urine —The Action of Guanidine on the Neuro-myal System of Decapod Crustacea, by J Smith Sharpe Guanidine in the vertebrate acts first as a stimulant and then as a depressant upon the motor cells of the spinal cord, and it also acts upon the neuro-myal junction in the skeletal muscles in the frog and mammal. Although crustacean and vertebrate muscles are structurally very similar, creatine is absent from crustacean muscle It would seem that in degenerate muscle after nerve section there is a marked fall in the creatine present. Another difference in the neuro-myon is that curare does not act on the neuro-myon in crustacea. The author finds that in crustacea guanidine salts produced jerkings and tremors of the muscles similar to those produced in vertebrates *This is due to* an action on the central nervous system as in mammals and not to an action on the peripheral neuro-myon as in the frog On these peripheral structures guanidine appears to be without action —On the Capacity of Blood and Hæmoglobin to Unite with Carbon Dioxide, by George A Buckmaster Blood as is well known, can absorb quantities of carbon dioxide Within limits the amount of gas absorbed would appear to rise and fall with the quantities of hæmoglobin present and therefore the quantity of the pigment is a determining factor in this matter Salt-free blood can absorb quantities of CO and within limits the capacity to do this augments with the percentage of hæmoglobin The author has not found much evidence to indicate that proteins free from salts can absorb this gas to any marked extent. Experiments showed that hæmoglobin is capable of taking up considerable amounts of CO_2 at pressures between 760 mm and 70 mm, pressures which do not normally occur in the human body So far the author has found that none of the proteins of the blood possess the property of absorbing carbon dioxide to the degree possessed by hæmoglobin. This pigment may behave generally like other proteins, but in addition possess a specific capacity for the absorption of carbon dioxide —A Comparison between Voluntary and Electrically Induced Muscular Work in Man by A. Krogh and J Lindhard. In 1911 Professor J Bergonié, of Bordeaux, constructed an instrument by which powerful rhythmic contractions of human muscles can be induced electrically with a minimum of unpleasant sensations The authors used a modification of this apparatus, combining it with the recording respiration apparatus of Krogh. Only the muscles of the legs were stimulated to avoid direct stimulation of the respiratory muscles The arm was used for pulse-rate The authors formulate the following conclusions —

1 The Bergonié treatment consists in rhythmic tetanisation of human muscles When applied to all the muscles of the legs it can without causing painful sensations raise the gas exchange to 1600 c c O_2 absorbed per minute 2 The effects on circulation and respiration of work induced by the Bergonié process have been studied and compared with those of voluntary work on the ergometer (*a*) The mechanism of the initial increase in pulse and ventilation rate is different in the two kinds of work. The increase originates, as a rule from cerebral impulses in voluntary work but is produced reflexly in induced A chemical regulation sets in later in both cases (*b*) During work—induced and voluntary alike—the pulse rate and circulation rate are linear functions of the metabolism but different in different subjects and dependent upon the state of training (*c*) The rate of ventilation is usually greater in induced work than in voluntary, corresponding to the same oxygen absorption This is probably due to afferent impulses from the stimulating currents 3 The direct effects of the Bergonié treatment as a cure for obesity are insignificant but the indirect effects produced by training of the muscles acted upon are probably considerable though we have not succeeded in demonstrating them in our experiments

The Oxygen Use of Denervated Muscle by J N Langley and M Itagaki. Denervated muscle rapidly loses weight so that the balance of repair and breakdown is upset to the detriment of the former Is the disturbance of balance due to a lessened power of repair or increased breakdown or both of these? A lessened power of repair has already been shown to be in part responsible for the change The animals used were cats and the nerves were cut on the left side Samples of blood were collected and analysed, the controls being taken from the undenervated side The authors made eight determinations on the oxygen use of denervated muscles on one side of the body and of the undenervated muscles on the opposite side In all cases a much greater oxygen use per gramme per minute was found to be present in the denervated muscles It is concluded from this that the atrophy of denervated muscles is not solely due to a decreased power of repair, the breakdown remaining constant, but that it must be due chiefly to an increase in the rate of breakdown of the muscle substance

Quarterly Journal of Experimental Physiology Edited by E A Schafer, W D Halliburton, C S Sherrington, E H Starling, and A D Waller. Vol X, Nos 3 and 4 London Charles Griffin and Co, Limited 1917 Pp 203–401. Price 15*s* —Almost the whole of the text is taken up with an elaborate note on the Parathyroids—Tetania Parathyreopriva its Nature, Cause, and Relations to Idiopathic Tetany It is divided into eight parts Part I, by D Noël Paton and Leonard Findlay, after an introduction on idiopathic tetany and experimental tetany, deals with general methods and symptoms Part II, by D Noël Paton, Leonard Findlay, and Alexander Watson, deals with the Parts of the Central Nervous System Involved and treats successively of the cerebral and cerebellar arcs and the spinal arc and its efferent spinal neurons The authors find from their experiments on cats and dogs that—

1 The nervous symptoms are due to the condition of the central nervous system 2 In the production of the spasticity, tremors, and jerkings the cerebral arc is not directly involved The increased violence of these symptoms after decerebration is due to unopposed action of cerebellar and spinal arcs 3 The tremors and jerkings develop independently of the cerebellar arc, but the integrity of this arc is essential for the production of the sustained spastic tone 4 The integrity of the spinal arc is not essential for the development of the tremors and jerkings, since they persist after section of the dorsal roots of the spinal nerves The efferent neurons are the structures primarily implicated 5 In advanced cases of tetania parathyreopriva disturbances of equilibrium seem to indicate a secondary involvement of the cerebellum 6 In such advanced cases the onset of epileptiform convulsions probably indicates the secondary involvement of the motor part of the cortex cerebri

Part III is by the same authors and deals with the Changes in the Peripheral Nerves and in the Muscles This contribution runs to over 70 pages The methods used and the results obtained in testing the electrical excitability of nerve and muscle are fully described In the normal animal the method of determining the electrical excitability (E E) of nerve and muscle by the application of the electrode on the skin over the structure to be stimulated gives a fairly accurate and consistent method of estimating the E E in milliampères As to tetania parathyreopriva and idiopathic tetany the following are some of the authors' conclusions —

1 As shown by previous workers, any marked decrease in the amount of parathyroid tissue is followed by a very marked increase in the E E of the peripheral motor nerves The same is found in all cases of idiopathic tetany 2. As a rule, no alteration of the normal sequence of the various responses results, but the A.O C is more frequently than in health greater than A.C C and on occasions may equal or be greater than K.C C This is, however, of no diagnostic value 3 Mechanical excitability, so characteristic of idiopathic tetany, is not in our experience such a prominent feature of tetania parathyreopriva 4 The increased E.E of the peripheral nerve is independent of changes in the central nervous system It occurs after section of the nerve and persists till degeneration sets in whether the nerve be cut before with, or after the removal of the parathyroids 5 The E E of muscle to direct stimulation is increased after parathyroidectomy, although not generally to the same extent as that of the nerve 6 This is chiefly due to an increased E.E of the neural structures in the muscle In some cases there is evidence that a post-neural substance may have its excitability increased 7 The nerve-ending is the part of the neural element acted upon, since in cross circulation experiments the results of stimulation of the sciatic nerve bathed in the animal's own blood varies with the changes produced in the peripheral nerve supplied with the foreign blood 8 In tetania parathyreopriva the increased E.E of the peripheral motor neuron is not proportionate to the intensity of the symptoms due to the condition of the central nervous system and after a definite fit it may be markedly reduced In idiopathic tetany the relation is somewhat closer, but is not directly proportionate Hence the increased electrical excitability cannot be taken as a measure of the severity of the condition

Part IV the Etiology of the Condition and its Relationship to Guanidine and Methyl guanidine Intoxication, is by D Noël Paton and Leonard Findlay The various possibilities as to the way in which removal of the parathyroids induces the characteristic train of symptoms are first considered A comparison of the symptoms of guanidine poisoning with those of tetania parathyreopriva shows a very close correspondence They bear the same relationship to tetania parathyreopriva that those following the administration of diphtheria toxin bear to the symptoms of true diphtheria The conclusions arrived at are as follows —

1 There is no direct interrelationship between the parathyroids and the thyroids 2 There is no evidence that the parathyroids exercise a direct controlling influence on the central nervous system 3 The symptoms of tetania parathyreopriva are not primarily due to decrease in any constituent of the body—e g , calcium ions 4 The symptoms are not due to an increase in ammonia or xanthin or β iminazolylethylamine in the blood 5 The symptoms are identical with those produced by the administration of salts of guanidine and methyl guanidine Direct evidence of the increase of these substances in the blood is given in the next paper

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Guanidine (and the Methyl guanidine expressed as Guanidine) in mg per 1000 c c

	Dogs	
A BLOOD	Normal (average of 5) 1 0	Parathyroidectomy (average of 8) 8 7
	Dogs	
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	Children	
	(Average of 5 individuals) 8 analyses 0 12	Idiopathic tetany (average of 3 cases) 13 analyses
		Active tetany 0 58
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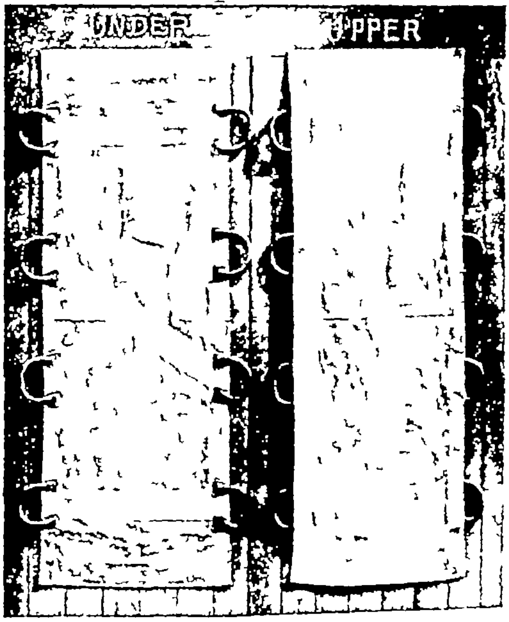
New Inventions.

DEVICES FOR MOVING PATIENTS

A DESCRIPTION is given below of two little inventions I have adopted for the use of military patients here, with gratifying results

1 *Carrying device* —The canvas (Fig 1) is passed under the patient and two nurses, orderlies, or porters on each side take hold of two handles each At the word "Lift" the patient is lifted bodily on to the wheeled stretcher, taken to the theatre, and lifted on to the table After the operation he is carried back in a similar way The canvas is removed before he comes out of his anæsthesia and it is put under the next case for operation In this hospital, where we have over 500 wounded, I find a stretcher for each ward is enough The village saddler makes them for 6s 6d When not in use they are hung by one handle across the anæsthetic room It is possible to move a patient, however badly wounded, from the bed to the operating table and back again without any handling of his person, hence saving pain, &c

FIG 1



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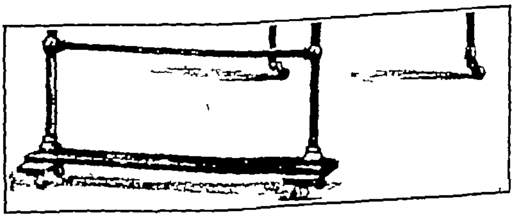
2 *The trolley* —The ends of the beds have no castors The bed end is raised, the trolley put in position under the end of the bed, and the two feet of the bed drop into the cavities in the trolley, as shown in Fig 2 When the bed reaches the desired position the end is raised the trolley kicked out of position and used for the next case The trolley can be wheeled anywhere provided the wheels do not sink into the soil with the weight of the bed The cost wheels included, is 3s 9d With few exceptions we wheel every bed into the balconies or grounds for all bedridden cases early in the morning, and at sundown they are wheeled back The time occupied for this is on the average 40 minutes One trolley is supplied to each ward of 30 beds.

FIG 2



The trolley in position.

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In 8 oz and 16-oz Bottles

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3 **Double specific action** (mercurial and arsenical)

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Medium Dose.—Intramuscular injections of 2 c c. corresponding to 6 cgr (0 92 grain) of **Enesol** per day should be injected by preference in the gluteal region

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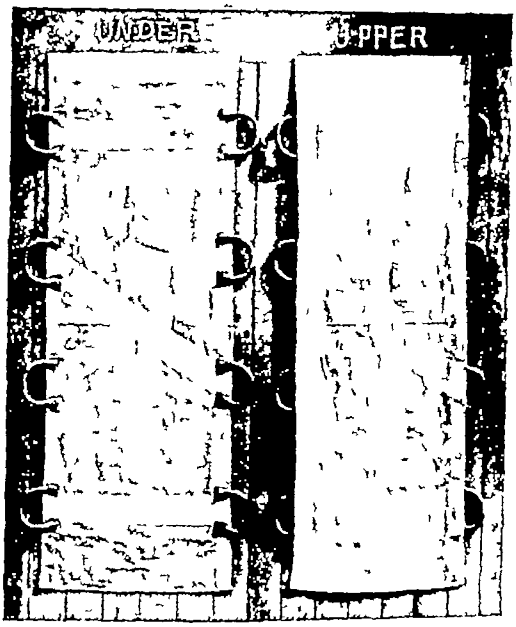

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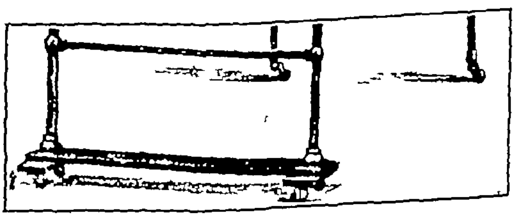

The trolley in position

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Late Major Armée Française.
Military Hospital Stepping Hill, Hazel Grove near Stockport

THE LANCET.

LONDON SATURDAY SEPTEMBER 22, 1917

Losses and Compensations

SOMETHING used to be heard of the ease and safety of the doctor's duties in the field, whether by land or sea, compared with those of his fellow officers in one of the combatant services. Such expressions grew rare during the South African War, and now are heard no more. The appearance with a terrible regularity of obituary notices of doctors, many of them at the commencement of promising careers, who have been instantly killed as they tended the wounded in advanced posts, who have been drowned in naval engagements or in torpedoed hospital ships, or who have died of injuries and diseases incidental to campaigning, has opened the eyes of everyone to the risks run by the medical officer on active naval or military service. In administrative posts, again, the medical work is often excessively onerous, for on the constant watchfulness and care of the responsible officer and on the maintenance of a *high* standard of efficiency, depend the lives and the chances of restoration of countless numbers of men of all ranks. It is only right that for such services honours should be given, and in the *record* of the London medical schools for the third completed year of warfare is contained the evidence that the debt of the country in this way is being steadily paid. More than 150 holders of the Military Cross appear in this incomplete list of London schools alone, along with other still more coveted distinctions, while the total of Commanderships of many noble Orders is not much fewer. The figures from Scotland, Ireland, and the provinces tell a like tale of duty done and guerdon won.

This is one side of a picture on which it is justifiable for the profession of medicine to look with pride. But there is another *side*, and the attention of medical men requires no directing to it; it is always present, consciously or subconsciously, to the mind of the doctor on service. What is becoming of his practice? What will remain of it when he returns? What will become of him if disabled, and of those dependent on him if he is killed? And the anxiety has not been rendered less by the extreme uncertainty which has prevailed until recently in regard to what the State is prepared to do in compensation for the losses entailed in its service, and how other needs are to be met for which the State disclaims responsibility. The *draft* of the new Royal Warrant issued a week or two ago by the Ministry of Pensions now makes it clear enough what the officer can expect from the State on account of personal disablement, and, in case he loses his life, for the maintenance of his widow and the education of his children. To many whose personal needs have been small and their establishments simple the State aid, which comes to them as their right and in recognition of services rendered, should not prove inadequate. But in many other cases this will not be so, and the man whose only asset before the war consisted of a good education and a hopeful prospect may well have grave doubts for the future of his wife and young children if he is taken from them or left disabled. Yet provision for them is indeed his right. It is not a question of charity but of justice, and it is to this category that many of the Army medical officers belong. The lack is pressingly felt of a patriotic fund including the whole medical profession to make automatic provision for all cases of hardship. Financial success in medicine is a lottery in which prizes are not won by all the deserving, but a percentage levy on the actual income of each medical man, whatever his position, would suffice to insure all its members against the risks of death and disablement before success is theirs. The Royal Medical Benevolent Fund in times of peace has long attempted to meet this need on a voluntary basis although its means have never been sufficient to do so completely. It is appropriate for the same organisation to deal with war emergencies, keeping the money to be raised for this purpose strictly separate from the main Fund. We have already given publicity to this special War Emergency Fund, directing attention to the desire of its promoters that it shall supplement and fill in the gaps left by other agencies without competing with them or covering any of the same ground.

Death and disablement with the consequent need of support for the widow and educational facilities for the orphans are more tangible objects for relief than the loss of professional earnings from a practice which has inevitably dwindled during absence on service. Where the drop has been greatest it can still, doubtless, be made good within some period after the practitioner's return in full vigour of mind and body, but in the mean time he will have many out-goings and little or no in-comings, and in some cases will be involved in a heavy uphill struggle. No fund quite meets his case. The Loan Fund proposed by the British Medical Association was intended for this purpose, but a wise decision of the recent Annual Representative Meeting deferred its definite institution until it has been shown that the needs cannot be met by the amalgamation or coöperation of other funds. In another column we have set out with some detail the nature and scope of these other funds, beginning with the Civil Liabilities Committee, which deals with non-commissioned applicants, leading on to the Professional Classes War Relief Council, whose work has been of surpassing value to many of those whose burdens have been borne in silence. The work of the Officers Families Fund has in the aggregate been very large, but its field of action is also very large, and it naturally deals only in small proportion with the needs of the medical services. The Officers' Benevolent Branch of the Auxiliary

THE TREATMENT OF VENEREAL DISEASES.

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SYPHILIS

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(2) CONCENTRATED — A special outfit containing one dose GALYL, one ampoule sterilised solution and one small filter is supplied.

DOSES
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0 35—0·40

(3) FOR INTRAMUSCULAR INJECTIONS — (Fig 2)

GALYL is supplied in glucose solution.

DOSES
0 10—0 15—0·20—0 30.

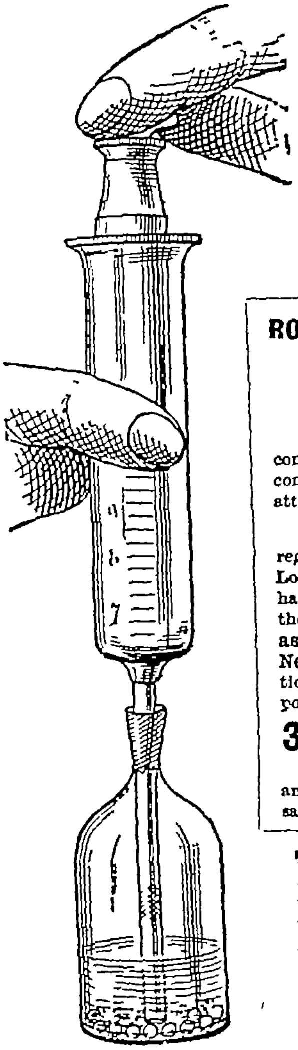


Fig 1.

ROYAL COMMISSION ON VENEREAL DISEASES.

Final Report of the Commissioners

SUBSTITUTES FOR SALVARSAN

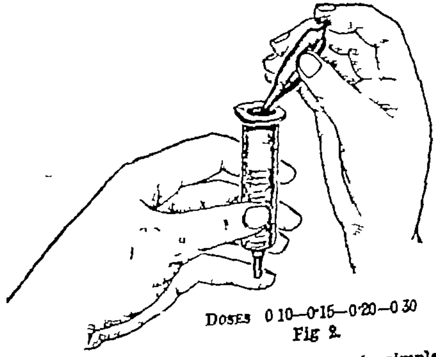
another French substitute GALYL a compound of arsenic and phosphorus has recently come into prominence and its use has been attended with considerable success

'Favourable reports have also been obtained regarding the preparation GALYL. At the Male Lock Hospital 1000 injections of this substance have been administered, and it is reported that they have been attended with **as good results as in the cases treated by Salvarsan and Neosalvarsan**, in no instance were the injections followed by reactions indicative of arsenic poisoning

3000 injections (intravenous) were given in one of our **Service Hospitals**.

' No case has given the slightest cause for anxiety and the clinical results are very satisfactory *Staff Surgeon s Report*

" .. .. Intramuscular Galyl with a little care in technique, can be used with little or no pain. The results are excellent, both immediate in the clearing up of evident lesions and ultimate, as proved by the Wassermann test. Personally I have used this preparation in over 400 injections with the best results and without the slightest mishap or inconvenience to the patient.
Yours faithfully Dr ——"



DOSES 0 10—0·15—0·20—0 30
Fig 2.

The technique is simple.

Fig 2 shows the ampoule of Galyl being emptied into the syringe barrel—the needle is now fixed on the neck of the syringe and the plunger inserted into the barrel. The injection is then ready for administration

CUPRASE

FOR THE MEDICAL TREATMENT OF CANCER.

Clinical facts carry greater weight than theoretical deductions Doctors of repute in various countries give cases of great variety In all of these **pain has been eliminated**, and in a good percentage **cures are claimed** in no instance **any undesirable effects** It should be remarked that all or nearly all the observations refer to inoperable cases in which the prognosis was unfavourable at an early date It is needless to emphasize the practical importance of a preparation capable of yielding such results even relative in the worst stages of a disease which has always been regarded as absolutely resisting the action of all internal remedies

Nothing has been found which can compare with the effects produced by means of Cuprase

Its **easy application** (subcutaneous injections) places it within the reach of all practitioners **It is not toxic**

Cuprase is a colloidal Copper hydroxide obtained by the reduction of Salts of Copper in the presence of Albumosic Acid

Disappearance of the Pain.

Return of Sleep

Increase of the Appetite,

Colour and Strength.

WARWICKSHIRE, July 1st, 1917

DEAR SIRS —Will you please send me another box of Cuprase ampoules. The previous lot effected a most remarkable cure in an elderly lady suffering from cervical cancer — the cauliflower like growth has disappeared with its offensive discharge.

This case was given three months life by a specialist, being inoperable

Yours faithfully
(Signed)
G—— B—— M.R.C S. L.R.C.P

THE ANGLO FRENCH DRUG CO, LTD, GAMAGE BUILDING, HOLBORN LONDON, E C 1
(Late M BRESILLON & Co)
Telegrams: "AMPSALVAS LONDON"
Telephone HOLBORN 1311

insufficient diet and the use of the so called "food substitutes There is a great scarcity of milk and dysenteric patients are often unable to obtain this essential article of their diet When obtainable the fatty matter has already been abstracted from the milk by order of the Government for use in munitions works There appears to be a possibility that before long relapsing or famine fever will be added to the epidemic diseases current in the Central Empires Already cases are being reported weekly in some districts of Germany, and Mannheim is specially mentioned as one of the worst sufferers In Poland relapsing fever is also occurring, and cases in increasing numbers are being reported week by week, especially in the towns of Warsaw, Lodz, and Plock, where the Poles are experiencing great privations and where the various epidemics have been adversely affected by the absence of medical men

Annotations.

"Ne quid nimis."

THE ESTIMATION OF FILTRATE-NITROGEN IN BLOOD AND OTHER BODY-FLUIDS

Mr R Donald, B Sc., is publishing in the *Quarterly Journal of Medicine* the results of a careful investigation into the methods for estimating filtrate nitrogen in the blood and other body fluids The research was made at the Pathological Institute and the Clinical Laboratory, London Hospital It is obvious that an estimate of nitrogenous waste in the blood might prove a valuable aid to diagnosis and therefore to treatment The work was done in the course of an inquiry into the retained nitrogen in various substances, principally blood and cerebro spinal fluid obtained in the wards and post-mortem room of the hospital The method consists in precipitating the proteins centrifuging instead of filtering, and then testing the clear fluid by an efficient hypobromite process The proteins are eliminated in two simple rapid stages First, the blood in a centrifuge tube is mixed with its own volume of a saturated sodium chloride solution in 6 per cent. sulphuric acid or in a mixture of nine tenths of 6 per cent sulphuric acid and one tenth of 6 per cent phosphoric acid The use of brine containing phosphoric acid avoids the precipitation of ammonia by phosphomolybdic acid, while it is compatible with phosphotungstic acid. After two centrifugations a clear liquid is obtained ready for treatment in the ureometer Ammonia and creatinin are included in the filtrate-nitrogen, ammonia being the direct representative of urea the inclusion of its nitrogen is desirable By this method it is stated that a provisional reading can be reported within about 20 minutes of the time the blood was received but for accuracy another half hour is required. The particular method of employing the ureometer for the purpose is fully described in the paper It depends upon the decomposition of the urea, creatinin and ammonia by hypobromite into free nitrogen gas. Control experiments done with various small known amounts of urea and of ammonium chloride showed that the process is quite close enough for clinical purposes According to the author, the normal lowness of the filtrate nitrogen in the blood seems to depend on three factors (1) A sufficiency of healthy kidney tissue (2) a sufficiently maintained or compensated circulation of blood through the kidneys, (3) a sufficient supply of water to the blood to allow a normal excretion of urine through free passages In children factors (1) and (2) are usually so good that their health percentage of filtrate nitrogen seems smaller than the 0 035 per cent of filtrate nitrogen stated as the general health limit Finding, he adds, in the blood taken at the autopsy of a baby admitted dying of diarrhœa and vomiting, but not yet emaciated some 0 18 per cent of filtrate nitrogen "is like hearing a post-mortem echo of the cry of the child's system for water ' Finally, such subimbibitional hypernitræmia will he concludes, be allowed for by an observant medical attendant As for factor (2), the "heart kidney seems to maintain the excretory function wonderfully well, but when factors (1) and (2) coöperate in failure, as, for instance, when with insufficient kidney tissue the circulation fails, then the filtrate nitrogen may rise to 0·2 per cent and higher, much as in acute nephritis with increased blood pressure The test described may prove valuable, adding to the objective data for the clinician s skill to work on The details of manipulation and the requisite apparatus are clearly described

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Current Epidemics in the Central Empires

Medical science during the present war has succeeded in preventing the occurrence among the military of certain epidemic diseases which in former campaigns have ravaged the forces in the field But among the civil populations of the Central Empires and among the unfortunate inhabitants of the occupied territories it is otherwise At the present time small pox, typhus, and dysentery are very prevalent, and relapsing fever is threatening to add itself to the list For more than two years small pox has been epidemic in Austria, and more particularly in the provinces of Galicia and Bukowina Not far short of 50,000 small pox cases have been reported in Austria during 1915–16, more than 42,000 of the attacks occurring in these two provinces, whence the infection was carried to some of the larger cities, including Vienna, Prague, and Budapest In Vienna during the 12 months immediately following the outbreak of war over 1600 cases were reported As vaccination is not obligatory in the civil population of Austria many persons are unprotected against small pox infection In Poland the disease is visiting Warsaw, among other places

Germany is regarded as being the best prepared of all European countries to resist attack by small pox, but the disease has been epidemic in North Germany during the first seven months of 1917, 2400 cases having been notified to the authorities, the largest number yet recorded in Germany since notification was begun The prevalence began in December, 1916, at Hamburg, where Russian prisoners were being employed as dock labourers and by whom probably the infection was introduced In addition to the prisoners of war large numbers of the people of the occupied districts of Belgium, Northern France, Poland, and other Russian provinces have been deported from their homes and compelled to work in North Germany in the fields or in the mines and factories or in other industries These wretched slaves, coming from countries in which vaccination is not compulsory, are in many instances unprotected against small pox, and form susceptible material on which an epidemic could easily develop Their susceptibility to infection is not likely to have been diminished by the overcrowding, underfeeding, and the overworking to which they have been subjected, nor by the depression of spirits from which they have suffered during their bondage From Hamburg small pox spread in the early months of 1917 to other districts in North Germany, affecting also some of the large towns, including Berlin, Munich, Leipzig, Potsdam, Essen, Bremen, Altona, Kiel, and Lübeck Small pox is in Europe generally a disease of the winter and spring months, so that while there has been in August some diminution in the number of cases reported weekly, it is very probable that with the advent of winter we may see a recrudescence of the epidemic in Germany

Typhus is endemic in the Austrian province of Galicia, but since the outbreak of war it is probable that typhus infection has been brought into the Austrian war zones by prisoners from Russia and Serbia It is well known that the wretched Serbian prisoners interned in Austria since the war have died in thousands from typhus in the concentration camps Among the Austrian civilian population more than 13,000 typhus cases occurred during 1915, and over 12,000 in 1916 During the first three months of 1917 about 3000 fresh cases were notified, most of them in Galicia. In Hungary, typhus is now prevalent, and in the first half of 1917 some 2500 cases were reported In Bosnia and Herzegowina typhus has also been rife during the whole period of the war In Poland, now occupied by German troops, there is at the present time a very severe epidemic of typhus going on, especially in the city of Warsaw and in the adjoining districts During the last 12 months nearly 16,000 cases have been reported, of which more than 8500 occurred in Warsaw Typhus has been appearing in Germany since 1914, chiefly among the prisoners of war who, crowded together in large numbers in camps, with little means afforded them of maintaining personal cleanliness or opportunities for changing their clothes and keeping themselves free from body vermin, soon developed typhus of a virulent kind, probably infected in the first instance by Russians

Dysentery is epidemic in Germany, and especially in Prussia, where in the first seven months of 1917 about 13,000 cases were notified among the civil population, more than 6000 attacks being reported during the last fortnight The chief places at present affected are Berlin, Potsdam, Strasburg, Frankfort, Munich, Mannheim, and the industrial districts of Rhenish Westphalia In Austria, too, dysentery is epidemic and from February to July, 1917, more than 4000 cases were officially recorded A Vienna newspaper recently stated that "cholera itself could not be worse than the dysentery epidemic now raging" This paper also asserted that the disease had been brought to Vienna by soldiers from the front There is suggestion that these prevalences of dysentery in Germany and Austria are associated with malnutrition, arising partly from improper or insufficient diet and the use of the so called "food substitutes" There is a great scarcity of milk and dysenteric patients are often unable to obtain this essential article of their diet When obtainable the fatty matter has already been abstracted from the milk by order of the Government for use in munitions works There appears to be a possibility that before long relapsing, or famine, fever will be added to the epidemic diseases current in the Central Empires Already cases are being reported weekly in some districts of Germany, and Mannheim is specially mentioned as one of the worst sufferers In Poland relapsing fever is also occurring, and cases in increasing numbers are being reported week by week, especially in the towns of Warsaw, Lodz, and Plock, where the Poles are experiencing great privations and where the various epidemics have been adversely affected by the absence of medical men

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CAMPHOR IN CARDIO-VASCULAR DISEASES

THERAPEUTIC observations by Professor Marfori,[1] of the University of Naples, with regard to the action of camphor on the cardio vascular system, have brought to light certain properties which deserve attention Hitherto this drug has been looked upon as the last resource to prolong the life of a diseased and exhausted heart, and injections of camphorated oil have been almost exclusively reserved for counteracting cardiac collapse in acute infective disorders or the threatened paralysis of the last stages of heart disease Professor Marfori and his assistant, Dr G Leone, found that the isolated mammalian heart, when poisoned by chloral so as to render the pulsations barely perceptible, could be rapidly restored to action by camphor, and furthermore, that its action on the circulation was very characteristic, as it could be proved that small doses invariably caused a diminution of arterial pressure and at the same time increased the volume of the cardiac pulsations Only toxic doses of camphor give rise to increased arterial pressure, accompanied by convulsive phenomena which seem to be independent of the vaso motor centres, as they are observed even during profound narcosis when these centres are rendered inexcitable Hence during the course of chronic myocarditis with simple cardiac insufficiency, changes in rhythm and auricular fibrillation, Professor Marfori considers no other drug can compete with camphor in sustaining the activity of the heart and steadying the pulse. He noticed that the beneficial effects obtained were continued after the drug was suspended, but recommends systematic treatment for a long period by giving one, or two, daily hypodermic injections of 0 10 gramme in oily solution. These doses may also be given by mouth as they are well borne In valvular lesions, when disturbance of the pulmonary circulation and hypertension in the right ventricle predominate, camphor is the most rational and efficacious remedy The drug is also quite useful in the pulmonary sclerosis of tuberculosis and in arterial hypertension with hypertrophied heart, vascular spasm of climacteric origin, and arterio sclerosis, it is capable of inducing beneficial changes in disordered function of the myocardium and especially of the right ventricle In conclusion, Professor Marfori says that camphor must no longer be considered merely as a remedy in the hour of death, but rather as a drug which, when intelligently administered, is capable of producing beneficial results throughout the entire course of various cardiac and vascular diseases owing to its special properties, which are distinct from those of other heart drugs

LEAD POISONING IN CHILDREN

LEAD poisoning in children is a condition which has received little or no attention in this country Many cases have, however, been observed in Australia, and articles which have appeared in the medical journals there from time to time during the last 25 years constitute the important literature of the subject As the symptoms differ somewhat from those in adults, on which all text book descriptions are based, lead poisoning in children is probably often overlooked One way in which Australian children have been poisoned is by contaminating their hands with the dried paint of railings and walls and then sucking their fingers or biting their nails In the *American Journal of the Medical Sciences* Dr K. D *Blackfan*, of Baltimore, has published an important paper on lead poisoning in children and reported four cases In early cases a change in disposition is often the first symptom noticed The child grows fretful, peevish, and often very restless at night The appetite declines, the breath is foul, and frequently hæmorrhages from the gums occur The child may complain of pain in the epigastrium and legs In cases of longer duration the pains in the abdomen become continuous and more severe Constipation is the rule and vomiting is rare The muscles are often so painful as not to permit of the weight of the bedclothes The gait is described as characteristic It is waddling, the patients walk on the outside of the feet, the toes are dragged and with each step the legs are swung sideways before the feet are put to the ground The attention of the parents may be attracted by one or more of these symptoms, but frequently nothing is observed until cerebral manifestations, such as convulsions, occur Very few of the cases show the characteristic wrist drop of adults Paralysis of cranial nerves is usual, the facial and motor oculi, entirely or partly, being most frequently affected Optic neuritis is also common As a rule the temperature is normal, but it may be irregularly elevated In fatal cases, especially in those with cerebral disturbances, it may rise as high as 105° or 106° F before death In early cases the symptoms may be only suggestive Then other evidence, such as the blue line on the gums and stippling of the red corpuscles, may be found Direct evidence of lead poisoning may be obtained by finding the metal in the urine or fæces The following are two of the cases reported by Dr Blackfan A boy, aged 2½ years, on March 8th 1915, had a convulsion from which he recovered On the 12th he was brought to hospital in convulsions which continued for 24 hours They involved the eyes, the left side of the face, and the left arm There were a leucocytosis of 19,000, stippling of the red corpuscles, a lead line on the gums, and an enlarged spleen The fundi were normal and lead was not found in the urine On March 26th convulsions involving the face and left arm recurred They continued for 24 hours, the temperature rose to 107 5°, and he died His father stated that he would gnaw any painted article and that he and his brother had ruined a set of parlour furniture by eating the paint off it In another case a boy, aged 3 years, became drowsy on July 30th, 1915, refused food, and vomited At night he was delirious On August 1st he became comatose and had several convulsions On the next day he was admitted to hospital There was a lead line about several of the upper teeth, and a few of the red corpuscles were stippled He lay in a condition of stupor for two or three days There was a *tache cerébrale* and the neck was rigid. On the 5th he was much better, sat up in bed, and could walk, but there was incomplete paralysis of the right facial nerve By the 12th he had quite recovered The source of the poisoning was not known

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[1] Il Policlinico Practical Section June 17th 1917

THE PROTECTIVE FUNCTIONS OF THE SKIN

THE function of the skin as a mechanical protection to the organs which lie within it is so obvious that it may have led to the overlooking of other equally important protective functions The skin as a whole may, of course, be regarded as an organ with a common and complete function of its own, to which view testimony is borne by the complete way in which it suffers in certain infectious diseases, such as scarlatina and variola, and it should be noted that it is precisely these infections in which the skin plays a large part where permanent or nearly lifelong immunity results Professor B Bloch, head of the dermatological clinic in Zürich, discusses some of these immunity problems in relation to the skin in a novel and suggestive way in the *Correspondenz Blatt für Schweizer Aerzte* for August 4th. He notes how seldom general paralysis or tabes is associated with a cutaneous gumma in the same patient and how rare it is to see these late parasyphilides at all in countries where in consequence of defective treatment severe tertiary lesions are common in the skin. He quotes the statistics of Mattauschek and Pilcz to confirm the relative infrequency of tabes in patients with early abundant cutaneous involvement Taken together these and similar observations lead Dr Bloch to lay great stress on the allergic function of the skin, its reaction to an unwelcome intrusion of which it has once had experience The classical researches of Richet, v Pirquet, and Römer have shown how the cutaneous manifestations of tubercle are influenced by this function of allergy which regulates their clinical course as well as the anatomical structure of the tuberculous nodule itself Cutaneous tuberculides are nothing else but the reaction of the forewarned skin of the chronic consumptive to any isolated bacilli brought by the blood stream Historically it has been from studies of the skin—beginning with Jenner's vaccination and Koch's fundamental experiment of tubercle inoculation in the guinea pig—that most light has been thrown on problems of immunity Due in part to the fact that the skin is so favourably situated for exact observation, the fact probably remains that it is to the external covering of the body which we must look for the most important workshop of the immunisation The struggle against attacking microbes from without has slowly adapted the skin and given it the ability to react against the parasites themselves as well as their toxins with the process which we now know as allergic inflammation This function has been gradually acquired in the history of the race and of the individual, since neither the skin of the lower animal nor of the new born child reacts in at all the same way as that of the human adult In this quality Dr Bloch sees one of the most important relations between dermatology and general medicine

THE inaugural address at the London (Royal Free Hospital) School of Medicine for Women, Hunter street, W C, for the session 1917–18 will be delivered by Dr Louisa Garrett Anderson, C B.E, on Monday, Oct 1st, at 3 30 P M, the subject being "Ambition."

WAR SERVICE AND THE MEDICAL MAN PENSIONS, GRANTS, AND ALLOWANCES

WE have put together in concise form the various means through which the medical man, who has entered either the Navy or Army, is compensated for invalidism or loss of professional income, while the case of his death on service is considered in respect of pensions to widows and children. The new Royal Warrant is placed first as it is not merely the most important organisation but is part of the ordinary terms of agreement between employer and employed Various agencies follow applicable in greater or lesser degree in different circumstances and the source of further information if required is given in each case. The War Emergency Fund of the Royal Medical Benevolent Fund is placed last but one, as its intention is avowedly to supplement and fill in the gaps of the other agencies, the Medical Patriotic Fund of the British Medical Association last of all as the fund is only to be instituted if others fail to coöperate or amalgamate.

MINISTRY OF PENSIONS THE ROYAL WARRANT (July, 1917)

Object —The draft Warrant issued by the Minister of Pensions in July deals with the retired pay of disabled officers (naval or military) and with the pensions of the families and relatives of deceased officers, with effect from April 1st, 1917 and the option of further retrospective effect if more favourable to the officer than his present retired pay The actual schedules are given as follows —

(1) *Retired Pay to Disabled Officers*

Degree of disablement	Percentage degree of disablement	Retired pay on account of disablement.										
		Officers not holding permanent commissions in Regular Forces									Officers holding permanent commissions in Regular Forces	
		Major General	Brigadier General		Colonel		Lieutenant Colonel	Major		Captain Lieutenant, or Second Lieutenant		All ranks	
	Per cent	£	£	s	£	s	£	£	s	£	s	£	
1	100	350	325	0	275	0	250	225	0	175	0	100	In addition to retired pay under Royal Warrant of Dec. 1st 1914
2	80	280	260	0	220	0	200	180	0	140	0	80	
3	70	245	227	10	192	10	175	157	10	122	10	70	
4	60	210	195	0	165	0	150	135	0	105	0	60	
5	50	175	162	10	137	10	125	112	10	87	10	50	
6	40	140	130	0	110	0	100	90	0	70	0	40	
7	30	105	97	10	82	10	75	67	10	52	10	30	
8	20	70	65	0	55	0	50	45	0	35	0	20	

(2) *Pensions, Gratuities, and Allowances to Officers' Widows and Children*

Rank	Widow s pension.		Widow's gratuity	Children s allowances	
(1)	(2)	(3)	(4)	(5)	(6)
Field Marshal	£800	£600	£3500	£30	£25
General	600	450	3000	30	25
Lieutenant-General	600	375	2000	30	25
Major General	400	300	1100	30	25
Brigadier General	300	225	900	30	25
*Colonel	200	150	600	24	20
†Lieutenant-Colonel	180	135	450	24	20
Major	140	105	300	24	20
Captain	100	75	250	24	20
Lieutenant	100	75	140	24	20
Second Lieutenant	100	75	100	24	20

* Colonel means an officer who has been employed in the rank of Colonel † Including a Colonel not employed as above

N B —Whether pension is granted to the widow on scale (2) or (3) and whether the gratuity (4) is added, depends on the particular circumstances attending the officer s death, and the same consideration applies to the additional children s allowance (6) Allowances are continued up to the age of 18 in the case of sons (with extension for purposes of education or apprenticeship) and to the age of 21 in the case of daughters

Conditions —Retired pay at temporary rates is given until disablement has reached its final condition, and a permanent pension then awarded cannot be subsequently altered to the officer's disadvantage *During special treatment pay at the* highest degree of disablement may be received In the case of total disablement the officer requiring the constant attendance of a second person may receive an additional allowance of £78 a year When the degree of disablement is less than *20* per cent a gratuity not exceeding £500 may be granted in lieu of retired pay

Literature —White paper, Cd 8631, price *2d* , from H M Stationery Office

MILITARY SERVICE (CIVIL LIABILITIES) COMMITTEE

Object —To grant pecuniary assistance to men, married or unmarried, serving with H M Forces who are unable by reason of undertaking military service to meet their financial obligations

Benefits —Applicants must *not* hold a *commission*, and must be ordinarily resident in the United Kingdom Assistance is granted in respect of rent, interest and repayment of loans, instalments under agreements of purchase rates and taxes, insurance premiums, school fees, but is not available for ordinary debts

Amount —Not to exceed £104 per annum (= £2 a week) paid quarterly

Conditions —The assistance may not be assigned and is liable to revision or withdrawal at any time It ceases on discharge from the Forces In case the grantee is reported dead or missing the assistance may be continued for 26 weeks to his widow or dependents

Application —Commissioners have been appointed for 45 districts in England 3 in Wales, and 18 in Scotland A list of addresses can be inspected at any post-office Application should be made to the Commissioner for the district in which the applicant or his family resides, on a form obtainable at the post-office

Literature —A white paper, Cd 8249, price 1½*d* , from H.M Stationery Office, gives all necessary information

PROFESSIONAL CLASSES WAR RELIEF COUNCIL (INC)

Object —To assist the families of professional men whose circumstances have been adversely affected by the war Those serving with H M Forces (without holding commissions) are advised to confer first with the Civil Liabilities Committee

Benefits —When granted these have been of a substantial character Up to the issue of the last report assistance had been granted to the extent of £10,851 for the education of 631 children, 256 babies had been born in the maternity home, and 103 candidates helped with their training at a cost of £1300

Application —The central office of the Council is at 13–14, Princes gate, S W 7 (*Tel Kensington* 6394/5) Chairman Major Leonard Darwin Chairman of executive Dr S West Honorary secretaries Theo G Chambers, Alex. Goddard Secretary Miss Percy Taylor Interviews by appointment only There are eight members of the medical profession on the Council—*namely*, Sir Thomas Barlow, Lady Barrett, Sir Francis Champneys, Sir Watson Cheyne, Dr G Newton Pitt, Mrs Scharlieb, Sir Frederick Taylor, Dr S West

Literature —The annual report for 1916 on application to the secretary

OFFICERS' FAMILIES FUND

Object —To assist *the wives and other* dependent relatives of officers in the Navy and Army (including service battalions, the Territorial Forces, Indian Army, and Colonial Forces) who find themselves in financial embarrassment or other trouble owing to direct or indirect expenses resulting from the war

Benefits —Assistance is provided in the form of (1) money, (2) medical assistance, with the coöperation of doctors, nurses, and maternity homes (Florence Nightingale Hospital, Lisson Grove) , (3) education, already given to 475 girls and boys (honorary secretary, Mr E H Parry), (4) clothing depôt for men at 2, Albert Gate, S W 5 , for women and children at 29, Berkeley square, W 1, managed by Lady Wilson), *(5) business advice* (chairman, Lord Justice Warrington, 2000 personal interviews have been given) (6) employment During the two years 1914–16 in all 9506 grants have been made, amounting to nearly £200,000, while 476 widows and 172 mothers have been assisted

Application —The central office of the Fund is at Lansdowne House, Berkeley square W 1 Honorary secretary, Countess Roberts Secretary, Miss H M Kelly *Interviews 11-1* (except Thursday and Saturday), or by appointment

Literature —A two-page leaflet on application Report of two years' work up to August, 1916

AUXILIARY R A M C FUNDS

Object —*(a)* Officers' Benevolent Branch To assist the orphans of commissioned officers of the three auxiliary branches of the R A M C —viz , the Special Reserve, the Territorial Force, and the New Armies—serving during the present war *(b)* Relief Branch *To assist the widows* and orphans of the rank and file of the same branches A similar fund has existed since 1820 in the regular R.A M.C

Benefits (of the Benevolent Branch) —Relief is given in respect of each orphan up to a maximum of *£40* in a year, and to the age of *21* years (boys) or *18* years (girls) A female orphan has a claim if over 50 years and unmarried, or at any age if unfit *Loss of both* parents constitutes a superior claim for relief, and priority is given to the relatives of officers killed in action, or who died of wounds or disease caused by active service Donations are given, not annuities.

Application —The office of the benevolent branch is at *124, Victoria street, S W 1 (Tel Vict 2722) President* Sir A Keogh Chairman Major Ewen Maclean Secretary, Lieutenant-Colonel E M Wilson Application should be made on or before July 1st in any year, the distribution taking place annually in October

Literature —A four page leaflet and a *14* page *book of rules* on application

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN

Object —To provide for the necessitous widows and orphans of its members

Conditions of membership —Membership is open to any registered medical practitioner *resident at the time* of his election within a 20 mile radius of Charing Cross The annual subscription is £2 2*s* Relief is granted in respect of life members and those of three years' standing

Benefits —A widow with an assured income of less than £100 a year receives £50 annually, *plus* £43 a year *for each orphan* up to 16 years of age The Copeland and Brickwell funds permit of further grants in special cases In the year 1916 £4223 odd was distributed, and on *the last day* of the year 48 widows and 9 orphans were in receipt of grants

Application —Secretary, 11, *Chandos street, Cavendish* square, W 1

Literature —The report *for 1916*, a *four* page leaflet, on application , also a statement of receipts, and expenditure for 1916

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND

Object —A special department *of* the Royal Medical Benevolent Fund to afford assistance to members of the medical profession who find themselves in temporary difficulties, consequent on having joined the Army *Medical* Service

Benefits —Grants on a liberal scale *will be made* in respect of rent, insurance, taxes, family maintenance and education, *in so far as the needs are not met* by any other existing fund if the necessary funds are forthcoming

Application —The office of the Fund is at 11, Chandos street, Cavendish square, W 1 (Tel *Mayfair* 1043) President, Dr S West Honorary treasurer, Colonel Charters Symonds Honorary secretary, Major G Newton Pitt The application will be investigated by one member of the committee of the Fund individually and laid before the Executive Committee anonymously

Literature —An appeal form on application

MEDICAL PATRIOTIC FUND OF THE B M A

At the last Annual Representative Meeting of the British Medical Association a scheme for loan fund for the protection and assistance of those who went to the war and on coming home found themselves in temporary difficulties was brought in by a subcommittee appointed for the purpose A resolution as follows was passed —

> This meeting approves the principle *of the* Medical Patriotic Fund (Loan Fund) Scheme and instructs the Council to consider and if approved to launch the scheme on the cessation of hostilities or earlier if the need arise unless in the meantime *amalgamation or coöperation* of existing funds shall render the establishment of an independent fund unnecessary or undesirable

THE BIOLOGICAL ASPECTS OF WARFARE

BY HARRY CAMPBELL, M.D LOND, F R C.P LOND,
PHYSICIAN TO THE WEST-END HOSPITAL FOR NERVOUS DISEASES LONDON

II *

The Two Sanctions of Conduct

A MAN'S conduct both towards his fellow man and the lower animals has two justifications or sanctions—the self-regarding sanction of might and the "others" regarding sanction of altruism.

Let us first consider the sanction of might—the justification, that is, for exercising might wholly or essentially in the interest of self It is expressed in the phrase "Might is right." According to this sanction what might can do that might is justified in doing The first great truth we have to realise respecting the might sanction is that sheer might, wholly untempered by consideration for others, operates with inexorable effect throughout the whole organic world In the struggle for existence living things have to contend against one another and against the forces of Nature, and in this struggle those go under that cannot successfully oppose might by might As regards the struggle between living things, the most lowly may be pitted against and overcome the most exalted, as when man succumbs to a microbic disease such as phthisis In a life-and-death struggle of this kind there is no sanction other than might, the victim has meekly to submit to the inevitable. Nor has he from the biological standpoint great cause for complaint seeing that from that standpoint the lowly tubercle bacillus has just as much right to live as man, the roof and crown of things

Let us now ask ourselves how far the sanction of sheer might prevails among the higher vertebrates—(*a*) between the sub-human vertebrates (*b*) between man and the latter, and (*c*) between man and man.

A.—The struggle among the lower animals is signally displayed in the case of the carnivora and their prey Here we see the operation of might in its grimmest and most dramatic aspect The sole warrant for the butchering activities of these animals is manifestly that of might although it must be admitted that a measure of altruistic sanction comes into play in the case of the carnivorous mother when she slaughters for the sake of her offspring

B —We have seen that since the time the pre human ape took to hunting he and his human descendants have wrought ruthless havoc among the lower animals Here again the sanction is just that of the other carnivora—the sanction of might—the self same sanction which permits the tiger to kill the deer or the cat the mouse Biologically considered, the victims of man and the carnivora generally have just the same right to a place in the sun as their victimisers Man may perhaps console himself somewhat for his indulgence in this wholesale slaughter by the reflection that if a race of superior beings were to descend upon this planet they would assuredly very speedily enslave or destroy the human race, and still more from the consideration, already urged, that it has been essentially through bloodshed that man has raised himself above the ape

C —The might sanction obtains widely as between man and man both as regards the relations between separate communities be they savage tribes or great nations, and those between the individual members constituting these communities The sanction for that subjugation of weaker tribes by stronger which has taken place throughout the entire period of man's tribal career has manifestly been that of might simply And so too as regards the warfare between civilised nations Even in this year of grace the dread arbitrament of war still continues to be the sole means for settling disputes which cannot otherwise be adjusted. The great nations of the world still refuse to lay aside their arms and submit their disputes to an international tribunal. Men like Treitschke and Bernhardi boldly proclaim that in international disputes might is right, and openly advocate the cultivation of the martial spirit and a prompt resort to arms if by their means the power and influence of the Fatherland seem likely to be extended The only gleam of better things comes in the fact that the great powers of the Entente are fighting not only in their own cause but in that of the small, i.e the weak, nationalities

Again, among the individual members of a community, tribal or national, we find the strong dominating the weak. This is true even of advanced civilised communities Actual personal combat is still in some degree sanctioned in the case of the comparatively harmless schoolboy fight and in the more formidable duel Happily, the latter method of settling personal differences has long since been given up in this country It is a flagrant instance of the might sanction in its most primitive form one man injures another, the injured person challenges the injurer, but far from being certain of getting reparation, he as likely as not receives additional injury if, indeed he is fortunate enough to escape with his life Here the sanction is just the same and just as little justifiable on rational or ethical grounds, as when two great nations engage in war

The individual is not, of course permitted unreservedly to exercise the might sanction in his own interests within the State Without some restrictions (to be considered later) no community could hold together Nevertheless, these restraints, considerable though they be, leave wide scope for the exercise of personal might in the interest of self, and there are few who fail to take advantage of it The tendency is for everyone to use such powers as he is free to exercise, without actually breaking the law or acting in violent defiance of public opinion for the purpose of securing for himself the good things of this world

The exercise of might within the sanction of the law falls under two categories though it is not easy to draw a sharp line between them We may speak of them as the illegitimate and the legitimate.

The illegitimate though legalised exercise of might includes conduct which, though essentially immoral is yet permissible by law the fact being that in a complex social system no code of laws can be devised which shall take account of every possible form of immoral dealing Hence it is possible for a person without breaking the law, to use his might in a manner which has little or no moral justification Large fortunes are made in ways which, though not illegal, are yet violently opposed to the spirit of altruism, as in the case of the man who establishes a corner in wheat, the employer who sweats his workers, the usurer who lends money at exorbitant interest Many of these procedures are santioned by general consent, though they are little more than modes of legalised robbery Has not the informed and skilful speculator something in common with the house-breaker ? Each uses his skill in annexing the property of others by taking advantage of their ignorance, while he renders no manner of service to the State Is it not, again, a matter of daily experience that when a person no matter what his social position has the legal power to squeeze another in his own interest he seldom fails to take advantage of it ?

We come now to the second category—the legitimate exercise of might in furtherance of self interest Some people are endued with greater powers than others, and society sanctions the exercise by the individual, in furtherance of self interest of such powers as he possesses provided he does not infringe the law or act in flagrant defiance of public opinion Herbert Spencer's formula of Justice runs thus Every man is free to do that which he wills provided he infringes not the equal freedom of any other man '

Now it will be found on ultimate analysis that the sanction here is not that of ideal justice—at least not of ideal justice as I conceive it—but just that of might Ideal justice demands, so it seems to me, that all shall start life equally endowed (both as regards native powers and worldly goods) and further that all shall be afforded equal opportunity But neither of these conditions obtains or can obtain. Nothing is more certain than that all are not equally endowed Dame Fortune distributes her favours in an entirely haphazard fashion. Some are gifted with a larger native endowment than others in the matter of health beauty intelligence force of character, or what not, and are able to reap corresponding advantages Some, again, are born rich others poor and what cannot the power of wealth accomplish ? The moneyed fool can command the service of multitudes and enjoy in abundance the good things of this world, while the penniless genius may starve in a garret. Then as regards differences of opportunity Some are born under conditions affording little scope for native endowment to come by her own. Village Hampdens and mute inglorious Miltons are more common than we think A man who attains to modest eminence in a small provincial town might, had he sought his fortune in the New World, have made his millions, or a village beauty who, like the heroine of that beautiful poem ' Maud Muller," has had to content herself with an uncouth swain for consort, might, had she been afforded the opportunity to display her charms behind the footlights, have blossomed into a peeress Power without opportunity is powerless

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* Article I was published in THE LANCET of Sept. 15th, p 433

Under ideally just conditions, which require that each and all shall be equally endowed as to person and opportunity, no one could secure an advantage over his fellows from the possession of an extra share of might It may be argued that even under such conditions it would still be possible for some by superior industry and grit to outstrip others in the race for life's prizes and thus secure a legitimate reward for having of *their own free will* made the best of their talents To which I would reply that this very industry and this very grit are part and parcel of the individual endowment Here we are up against the old question of the freedom of the will To me it seems that equality of endowment implies equality as regards industry and force of character, and that feelings thoughts, and acts conform to undeviating laws

We thus see that ideal justice is not possible, but we are not on that account to suppose that everyone ought to forgo the special benefits which blind fortune may have bestowed upon him, or that an attempt should be made to secure ideal justice by a quixotic altruism It is idle to strive after the impracticable or to seek to over ride the great biological law of struggle - throughout all living nature the battle is, and ever will be, to the strong A vigorous individualism, subject to necessary legal restrictions and tempered by a generous altruism, is the ideal to be aimed at Subject to these reservations, might is a legitimate sanction My object has merely been to show that this sanction operates with potent effect, even in the most advanced and best-regulated communities

(*Note* —The conclusion here arrived at as to the legitimacy of exercising might within the limits specified has the authority of Herbert Spencer He points out that, except in the case of the immature throughout the entire animal kingdom the benefits received tend to be in direct proportion to the merits possessed, an arrangement which necessarily secures the survival of the fittest "Each individual" he insists, "ought to be subject to the effects of its own nature and resulting conduct," a principle which among the lower animals holds good without qualification Among men there is an instinctive craving for freedom of action, and Spencer maintains that this freedom should be permitted so long as it does not interfere unduly with the freedom of others)

The Checks to the Operation of Might

We have seen how the might sanction operates throughout the entire animal kingdom and how even in advanced human societies its potency is far greater than appears at first sight Let us now consider more particularly some of the restraints which limit its operation Among the most effective of these is the altruistic prompting which leads parents to tend their offspring This parental instinct is now recognised to be the foundation of all altruism—the generous impulse to work in the interest of others rather than of self

All animals which tend their young must at least be endowed with just so much altruism as pertains to the parental instinct, whether maternal, paternal, or both (In the case of mammals the care of the young is for the most part limited to the mother) It is, moreover necessary that the entire family group shall be pervaded by something akin to the altruistic spirit, or at least that the members of the group shall not act antagonistically to one another in order that they may cohere and live in harmony together In the case of the non gregarious animals this parental and family altruism constitutes the sole check on the might sanction Save for its influence the non gregarious animal (the tiger, for instance) employs all its powers for selfish ends alone.

In the case of gregarious animals other checks come into play, but before dealing with these it will be well to examine into the purpose of gregariousness Its object is mutual help By union into an organised community the welfare of each animal in that community may be promoted Thus the capture of prey may be facilitated, as in the case of the wolf which, by hunting in packs can secure a more ample supply of food than by individual effort, or again, the union may serve the purpose of protection, as in the case of many of the herbivora (e g, the deer and the ox), for the herd not only presents a united front to the enemy, but by the multiplicity of its organs of scent and vision is so much the more appreciative of approaching danger Man's gregariousness has a similar *raison d etre* That primitive human families combined into tribes for utilitarian purposes we are very sure. Their union enabled the men to coöperate in the hunt and the women in the gathering and preparation of vegetable food, while it served the further purpose of protection against enemies, human or other The interest of this utilitarian communal life as bearing on our present inquiry lies in the influence it has had in creating checks on the régime of pure might—checks which, becoming increasingly stringent with the development of communal life, have attained to greatest stringency in the most advanced civilised communities

And first as to the checks on the operation of might among infra human communities My remarks on this head must be brief It is obvious that no community could hold together if each member worked for its own interest without any reference to its fellows Some psychic influence, antithetic to the purely egoistic manifestation of might and tending to secure the cohesion of the whole, must be at work And such is undoubtedly the case Thus some glimmer of altruism may be observed among the members of the herd in the shape of mutual help, and, again, a harmful assertion of might on the part of one member of the herd may lead to its being chastised by other members or even outlawed from the community, as in the case of the malicious rogue elephant In short, each member of the herd needs to discipline its conduct in due regard to the others in order that all may live together harmoniously and coöperate for common ends

And as with infra human so with human communities—the individual members need to be bound together by psychic influences, which constitute so many restraints on the purely egoistic might sanction. When families began to unite into tribes the altruism, until then confined to the family group, extended to the entire tribe, for some measure of mutual help, however small, was necessary to its cohesion This also required that certain rules of conduct should be observed, rules which, indeed, in many cases developed a complexity out of all proportion to their usefulness (as in the case of those in force among the Australian aborigines) These rules were not deliberately framed, but grew up spontaneously and were perpetuated and emphasised by tradition. Nor were they enforced by an executive but simply by public opinion, fear of which ever constitutes an effective check on unconventional conduct Disputes between members of the tribe—private wrongs such as theft and even murder—were settled privately The injured persons took the law into their own hands (as we say) and avenged themselves as best they could by retaliation the fear of which like the fear of public opinion, always operates as a useful restraint

It was not, indeed, until a comparatively late phase of social evolution that Government undertook the protection of the individual In the first instance, its sole concern—its *raison d etre*, in fact—was the military one of protecting the community against external foes, tribal customs enforced by public opinion and the fear of retaliation against private wrongs, aided by some measure of altruistic spirit, sufficing to maintain the integrity of the tribe But something more than these was necessary to protect the tribe against outside enemies This demanded a central authority in the person of a chief or king whose business it should be to weld the manhood of the tribe into a fighting force Needless to say, that at this primitive phase of society there was no question of exemption owing to conscientious motives The first duty of all the able-bodied men—and these comprised practically the entire manhood of the tribe—was to preserve the integrity of the tribe against attack We have thus an ancient precedent for universal military service Assuredly the first duty of a government is now, as it was at the first beginning of communal life to secure adequate defence of the state against its enemies and to compel, if need be all its able bodied manhood not otherwise required to take up arms against the common foe. The man who is deaf to this elemental call of duty is an undesirable from the eugenic standpoint. From such as him we are little likely to breed a virile race; we must not, we cannot allow our bravest and best to be killed while the faint hearted are left to perpetuate the race.

As society developed government undertook the duty of protecting the interests of the individual by enacting and enforcing laws, and thus a further check was put upon the operation of might. Meanwhile another and most powerful restraining influence had come into operation—the fear of divine vengeance. But to trace the growth of the religious element in man would take me beyond the scope of this essay and I merely name it.

The operation of these various checks during countless generations has had a profound influence on man's affective nature. There has evolved in consequence of them a disposition to act in accordance with the requirements of complex social life, for on the whole those most amenable to social discipline and those most altruistically disposed have survived at the expense of the anti social and the egoistic; there has evolved, in short, a disposition to act morally (i.e. dutifully towards our fellows), and a corresponding sense of justice has been built up. Thus it has come about that from the first institution of communal life among men there has been a steady weakening of the might sanction, so that to-day civilised man revolts against its unbridled exercise. He realises that while it is excellent to have a giant's strength it is tyrannous to use it like a giant, and he applauds the "noble doom" which Posthumus imposes upon the man who has wronged him:—

> Kneel not to me:
> The power I have on you is to spare you;
> The malice towards you, to forgive you: live,
> And deal with others better.

It will thus be seen that just as communal life has evolved on a utilitarian basis so also has morality; its function is neither more nor less than the maintenance of the integrity of the social organism. From the biological standpoint it has no other significance. Nor must it be forgotten that sheer might has also its range of usefulness in the animal world, a wider even perhaps than that of *altruism*. Each is but a means to an end and biologically neither merits commendation or condemnation more than the other.

(To be concluded.)

PARIS

(FROM OUR OWN CORRESPONDENT.)

Ear Protection against Concussion.

NUMEROUS symptoms in combatants due to the effect on the ears of the explosion of large projectiles have led to the consideration of equally numerous means for the protection of the hearing apparatus. Gunners are advised to keep their mouths open at the moment of firing. For the unexpected bursting of projectiles various methods of protection have been recommended, but it has been found necessary to discard all—among them cotton wool pads—which appreciably diminish the perception of sound and so prevent the soldier from hearing the word of command. In practice hollow perforated obturators are the best. These are placed in the external auditory canal so as to allow of the passage of sound waves through the double perforation, while the cavity arrests the force of the larger waves, so that they reach the drum membrane much attenuated. MM. L. and M. Vérain have laid two models of these obturators before the *Academy of Medicine*. They are made of celluloid or aluminium in the shape of an olive and are perforated at each extremity. In one model each hole leads by a T shaped tube into the interior. The simpler method is divided into two compartments by a transverse diaphragm pierced by a simple hole from which a small hollow rod penetrates into the anterior compartment. More than 600 pairs of these obturators were employed in two months in an artillery regiment, and during this time not a single case of tinnitus, vertigo, hæmorrhage, or obstruction by wax was observed. M. Jacques, of the 8th Army, is responsible for a still simpler model consisting of a spherical capsule of gelatin, such as are used to contain medicaments, after emptying the contents through a small hole pierced at each end. The size of the hole is regulated by the sensitiveness in the particular case. The results obtained with this model have been as satisfactory as with the others.

Professional Secrecy and the Exposure of Criminal Abortion.

Feeling runs strong in French medical circles in regard to the proposal under discussion at the Academy of Medicine dealing with the causes of depopulation and the strenuous repression of abortion, and numerous articles are appearing in the medical and lay press. The proposal is to release the medical man from his obligation of professional secrecy when he is called to appear for the prosecution in case of a criminal abortion of which he has professional knowledge. M. Berthélémy, professor in the Parisian Faculty of Law, recently declared before the Société de Médecine Légale that the abortion danger had become so great as to render advisable abolition *of the obligation to professional secrecy and of the impunity* to the guilty which this obligation conferred. The society adopted this view, with the rider that the doctor should not be liable to prosecution if he believed he had answered conscientiously the questions put to him by the legal authority, and that it was his duty to take the initiative in denouncing the authors of abortion when he learned of them through the confession of his patient, since such persons were outside the protection accorded by the obligation of secrecy. Dr. Lepage, a hospital accoucheur, believes that the reform will have no practical value, because the doctor can rarely be certain of the measures taken to produce abortion unless he possesses a formal confession from the patient, which the latter will hesitate to give, not being herself protected by the seal of secrecy. M. Doléris regards the duty of exposing the authors of abortion as an absolute one, constituting the only means of restraining their nefarious activities. The president of the Society of Medical Practitioners declares, on the other hand, that professional secrecy should be observed in all circumstances, for otherwise patients will no longer venture to confide in their doctors, and thus remaining unattended will die in greater numbers than before without any reduction in the number of abortion-mongers. The controversy continues.

Sept. 10th.

THE CONTROL OF VENEREAL DISEASES.

Prohibition of Unqualified Treatment.

ACTING on the powers conferred upon it by the Venereal Disease Act, 1917, the Local Government Board has prohibited from Nov. 1st next the treatment of venereal disease except by duly qualified persons, in the counties of Buckingham, Cambridge, Durham, Essex, Hereford, Hertford, Isle of Ely, Kent, Leicester, London, Middlesex, Norfolk, Northampton, Northumberland, and Surrey, and in the county boroughs of Bootle, Bradford, Cardiff, Coventry, Croydon, Darlington, Dewsbury, Dudley, East Ham, Hastings, Leeds, Leicester, Newcastle upon-Tyne, Northampton, Norwich, Portsmouth, Sunderland, Tynemouth, Wakefield, Warrington, and West Ham. Persons contravening the provisions of the section are liable to imprisonment for two years or to a fine of £100.

The City of London Treatment Centre.

The treatment centre which was recently opened by Lieutenant-Colonel W. R. Smith, R.A.M.C., chairman of the Sanitary Committee of the City Corporation, is situated at the City Shelter, 19-20 Golden lane, E.C. The times of attendance are: For men, Wednesdays 12–2 and Fridays 5–7; for women and children, Mondays 12–2. Captain W. Girling Ball is the officer in charge. The initial outlay on the centre has been about £1400, and the annual working expenses are estimated at £1800, plus £400 for salvarsan.

National Council for Combating Venereal Diseases.

Following on successful public meetings local branches of the National Council have recently been formed at Manchester and at Canterbury.

Venereal Disease and Marriage.

At a recent session of the New York State Legislature an amendment to the Domestic Relations Law was placed on the statute books requiring all persons applying for a marriage licence to take the following oath:—

> I have not to my knowledge been infected with any venereal disease, or if I have been so infected within five years I have had a laboratory test within that period which shows that I am now free from infection from any such disease.

The mere taking of such an oath will naturally not make attains to modest eminence in a small provincial town might, had he sought his fortune in the New World, have made his millions , or a village beauty who, like the heroine of that beautiful poem ' Maud Muller," has had to content herself with an uncouth swain for consort, might, had she been afforded the opportunity to display her charms behind the footlights have blossomed into a peeress Power without opportunity is powerless

Under ideally just conditions, which require that each and all shall be equally endowed as to person and opportunity, no one could secure an advantage over his fellows from the possession of an extra share of might It may be argued that even under such conditions it would still be possible for some by superior industry and grit to outstrip others in the race for life's prizes and thus secure a legitimate reward for having of *their own free will* made the best of their talents To which I would reply that this very industry and this very grit are part and parcel of the individual endowment Here we are up against the old question of the freedom of the will To me it seems that equality of endowment implies equality as regards industry and force of character, and that feelings thoughts, and acts conform to undeviating laws

We thus see that ideal justice is not possible, but we are not on that account to suppose that everyone ought to forgo the special benefits which blind fortune may have bestowed upon him, or that an attempt should be made to secure ideal justice by a quixotic altruism It is idle to strive after the impracticable or to seek to over-ride the great biological law of struggle throughout all living nature the battle is, and ever will be, to the strong A vigorous individualism, subject to necessary legal restrictions and tempered by a generous altruism, is the ideal to be aimed at Subject to these reservations, might is a legitimate sanction My object has merely been to show that this sanction operates with potent effect, even in the most advanced and best regulated communities

(*Note* —The conclusion here arrived at as to the legitimacy of exercising might within the limits specified has the authority of Herbert Spencer He points out that except in the case of the immature throughout the entire animal kingdom the benefits received tend to be in direct proportion to the merits possessed, an arrangement which necessarily secures the survival of the fittest "Each individual " he insists, "ought to be subject to the effects of its own nature and resulting conduct, ' a principle which among the lower animals holds good without qualification Among men there is an instinctive craving for freedom of action, and Spencer maintains that this freedom should be permitted so long as it does not interfere unduly with the freedom of others)

The Checks to the Operation of Might

We have seen how the might sanction operates throughout the entire animal kingdom, and how even in advanced human societies its potency is far greater than appears at first sight Let us now consider more particularly some of the restraints which limit its operation Among the most effective of these is the altruistic prompting which leads parents to tend their offspring This parental instinct is now recognised to be the foundation of all altruism—the generous impulse to work in the interest of others rather than of self

All animals which tend their young must at least be endowed with just so much altruism as pertains to the parental instinct, whether maternal, paternal or both (In the case of mammals the care of the young is for the most part limited to the mother) It is, moreover necessary that the entire family group shall be pervaded by something akin to the altruistic spirit, or at least that the members of the group shall not act antagonistically to one another, in order that they may cohere and live in harmony together In the case of the non gregarious animals this parental and family altruism constitutes the sole check on the might sanction Save for its influence the non gregarious animal (the tiger, for instance) employs all its powers for selfish ends alone.

In the case of gregarious animals other checks come into play, but before dealing with these it will be well to examine into the purpose of gregariousness Its object is mutual help By union into an organised community the welfare of each animal in that community may be promoted Thus the capture of prey may be facilitated, as in the case of the wolf which, by hunting in packs can secure a more ample supply of food than by individual effort , or again, the union may serve the purpose of protection as in the case of many of the herbivora (e.g , the deer and the ox), for the herd not only presents a united front to the enemy, but by the multiplicity of its organs of scent and vision is so much the more appreciative of approaching danger Man's gregariousness has a similar *raison d'etre* That primitive human families combined into tribes for utilitarian purposes we are very sure. Their union enabled the men to coöperate in the hunt and the women in the gathering and preparation of vegetable food, while it served the further purpose of protection against enemies, human or other The interest of this utilitarian communal life as bearing on our present inquiry lies in the influence it has had in creating checks on the régime of pure might—checks which, becoming increasingly stringent with the development of communal life, have attained to greatest stringency in the most advanced civilised communities

And first as to the checks on the operation of might among infra human communities My remarks on this head must be brief It is obvious that no community could hold together if each member worked for its own interest without any reference to its fellows Some psychic influence, antithetic to the purely egoistic manifestation of might and tending to secure the cohesion of the whole, must be at work. And such is undoubtedly the case Thus some glimmer of altruism may be observed among the members of the herd in the shape of mutual help and, again, a harmful assertion of might on the part of one member of the herd may lead to its being chastised by other members or even outlawed from the community, as in the case of the malicious rogue elephant In short, each member of the herd needs to discipline its conduct in due regard to the others in order that all may live together harmoniously and coöperate for common ends.

And as with infra-human so with human communities—the individual members need to be bound together by psychic influences, which constitute so many restraints on the purely egoistic might sanction When families began to unite into tribes the altruism, until then confined to the family group, extended to the entire tribe, for some measure of mutual help, however small, was necessary to its cohesion. This also required that certain rules of conduct should be observed, rules which, indeed, in many cases developed a complexity out of all proportion to their usefulness (as in the case of those in force among the Australian aborigines) These rules were not deliberately framed, but grew up spontaneously and were perpetuated and emphasised by tradition. Nor were they enforced by an executive, but simply by public opinion, fear of which ever constitutes an effective check on unconventional conduct Disputes between members of the tribe—private wrongs such as theft and even murder—were settled privately The injured persons took the law into their own hands (as we say) and avenged themselves as best they could by retaliation, the fear of which, like the fear of public opinion, always operates as a useful restraint

It was not indeed, until a comparatively late phase of social evolution that Government undertook the protection of the individual In the first instance, its sole concern—its *raison d'être*, in fact—was the military one of protecting the community against external foes tribal customs enforced by public opinion, and the fear of retaliation against private wrongs, aided by some measure of altruistic spirit, sufficing to maintain the integrity of the tribe But something more than these was necessary to protect the tribe against outside enemies This demanded a central authority in the person of a chief or king whose business it should be to weld the manhood of the tribe into a fighting force Needless to say, that at this primitive phase of society there was no question of exemption owing to conscientious motives The first duty of all the able bodied men—and these comprised practically the entire manhood of the tribe—was to preserve the integrity of the tribe against attack. We have thus an ancient precedent for universal military service Assuredly the first duty of a government is now, as it was at the first beginning of communal life to secure adequate defence of the state against its enemies, and to compel if need be all its able bodied manhood not otherwise required to take up arms against the common foe The man who is deaf to this elemental call of duty is an undesirable from the eugenic standpoint From such as him we are little likely to breed a virile race , we must not, we cannot allow our bravest and best to be killed while the faint-hearted are left to perpetuate the race

As society developed government undertook the duty of protecting the interests of the individual by enacting and enforcing laws and thus a further check was put upon the operation of might Meanwhile another and most powerful restraining influence had come into operation—the fear of divine vengeance But to trace the growth of the religious element in man would take me beyond the scope of this essay and I merely name it.

The operation of these various checks during countless generations has had a profound influence on man's affective nature There has evolved in consequence of them a disposition to act in accordance with the requirements of complex social life, for on the whole those most amenable to social discipline and those most altruistically disposed have survived at the expense of the anti social and the egoistic there has evolved, in short a disposition to act morally (i.e dutifully towards our fellows), and a corresponding sense of justice has been built up Thus it has come about that from the first institution of communal life among men there has been a steady weakening of the *might* sanction, so that to-day civilised man revolts against its unbridled exercise He realises that while it is excellent to have a giant's strength it is tyrannous to use it like a giant, and he applauds the 'noble doom" which Posthumus imposes upon the man who has wronged him —

> Kneel not to me :
> The power I have on you is to spare you
> The malice towards you to forgive you live
> And deal with others better

It will thus be seen that just as communal life has evolved on a utilitarian basis so also has morality, *its function is neither more nor less than the maintenance of the integrity of the social organism From the biological standpoint it has no other significance* Nor must it be forgotten that sheer might has also its range of usefulness in the animal world, a wider even perhaps than that of altruism Each is but a means to an end, and biologically neither merits commendation or condemnation more than the other

(To be concluded)

PARIS

(FROM OUR OWN CORRESPONDENT)

Ear Protection against Concussion

NUMEROUS symptoms in combatants due to the effect on the ears of the explosion of large projectiles have led to the consideration of equally numerous means for the protection of the hearing apparatus Gunners are advised to keep their mouths open at the moment of firing For the unexpected bursting of projectiles various methods of protection have been recommended, but it has been found necessary to discard all—among them cotton wool pads—which appreciably diminish the perception of sound and so prevent the soldier from hearing the word of command In practice hollow perforated obturators are the best These are placed in the external auditory canal so as to allow of the passage of sound waves through the double perforation, while the cavity arrests the force of the larger waves, so that they reach the drum membrane much attenuated MM L and M Vérain have laid two models of these obturators before the Academy of Medicine They are made of celluloid or aluminium in the shape of an olive and are perforated at each extremity In one model each hole leads by a T shaped tube into the interior The simpler method is divided into two compartments by a transverse diaphragm pierced by a simple hole from which a small hollow rod penetrates into the anterior compartment. More than 600 pairs of these obturators were employed in two months in an artillery regiment, and during this time not a single case of tinnitus vertigo hæmorrhage or obstruction by wax was observed M Jacques, of the 8th Army is responsible for a still simpler model consisting of a spherical capsule of gelatin such as are used to contain medicaments after emptying the contents through a small hole pierced at each end The size of the hole is regulated by the sensitiveness in the particular case. The results obtained with this model have been as satisfactory as with the others.

Professional Secrecy and the Exposure of Criminal Abortion

Feeling runs strong in French medical circles in regard to the proposal under discussion at the Academy of Medicine dealing with the causes of depopulation and the strenuous repression of abortion and numerous articles are appearing in the medical and lay press The proposal is to release the medical man from his obligation of professional secrecy when he is called to appear for the prosecution in case of a criminal abortion of which he has professional knowledge M Berthélemy professor in the Parisian Faculty of Law, recently declared before the Société de Médecine Légale that the abortion danger had become so great as to render advisable abolition of the obligation to professional secrecy and of the impunity to the guilty which this obligation conferred The society adopted this view, with the rider that the doctor should not be liable to prosecution if he believed he had answered conscientiously the questions put to him by the legal authority , and that it was his duty to take the initiative in denouncing the authors of abortion when he learned of them through the confession of his patient since such persons were outside the protection accorded by the obligation of secrecy Dr Lepage, a hospital accoucheur, believes that the reform will have no practical value, because the doctor can rarely be certain of the measures taken to produce abortion unless he possesses a formal confession from the patient, which the latter will hesitate to give not being herself protected by the seal of secrecy M Doléris regards the duty of exposing the authors of abortion as an absolute one, constituting the only means of restraining their nefarious activities The president of the Society of Medical Practitioners declares, on the other hand, that professional secrecy should be observed in all circumstances, for otherwise patients will no longer venture to confide in their doctors, and thus remaining unattended will die in greater numbers than before without any reduction in the number of abortion-mongers The controversy continues

Sept 10th

THE CONTROL OF VENEREAL DISEASES

Prohibition of Unqualified Treatment

ACTING on the powers conferred upon it by the Venereal Disease Act, 1917 the Local Government Board has prohibited, from Nov 1st next, the treatment of venereal disease, except by duly qualified persons, in the counties of Buckingham, Cambridge, Durham, Essex, Hereford, Hertford Isle of Ely, Kent, Leicester, London, Middlesex, Norfolk, Northampton Northumberland, and Surrey, and in the county boroughs of Bootle, Bradford, Cardiff, Coventry, Croydon Darlington Dewsbury, Dudley, East Ham, Hastings, Leeds, Leicester, Newcastle upon Tyne, Northampton, Norwich Portsmouth, Sunderland, Tynemouth, Wakefield, Warrington, and West Ham Persons contravening the provisions of the section are liable to imprisonment for two years or to a fine of £100

The City of London Treatment Centre

The treatment centre which was recently opened by Lieutenant-Colonel W R Smith, R A.M C , chairman of the Sanitary Committee of the City Corporation is situated at the City Shelter 19 20 Golden lane, E C The times of attendance are For men Wednesdays 12–2 and Fridays 5–7 , for women and children Mondays 12–2 Captain W Girling Ball is the officer in charge The initial outlay on the centre has been about £1400 and the annual working expenses are estimated at £1800, plus £400 for salvarsan

National Council for Combating Venereal Diseases

Following on successful public meetings local branches of the National Council have recently been formed at Manchester and at Canterbury

Venereal Disease and Marriage

At a recent session of the New York State Legislature an amendment to the Domestic Relations Law was placed on the statute books requiring all persons applying for a marriage licence to take the following oath —

> I have not to my knowledge been infected with any venereal disease or if I have been so infected within five years I have had a laboratory test within that period which shows that I am now free from infection from any such disease

The mere taking of such an oath will naturally not make absolutely certain that both parties are free from infection at the time of marriage, but the new law will nevertheless exert an important educational influence on public opinion

Compulsory Detention in South Africa

Dr Chales Porter, medical officer of health of Johannesburg, has reported to the municipal council that under the Local Government Ordinance, 1912, Section 72 (3), the council has power to make by laws for preventing the outbreak and spread not only of infectious diseases, but also of contagious diseases, and for the segregation and treatment of sufferers from contagious diseases, the word 'contagious" having been inserted at the suggestion of the medical officer of health Several specific instances have come to the notice of the medical officer of health in which a sufferer from venereal disease in a contagious condition has refused to go to the isolation hospital or to remain there, with resulting danger to those with whom he comes in contact The medical officer of the prison has represented that at present he is compelled to discharge uncured from his hospital at the expiration of their sentences both white and coloured persons suffering from various forms of venereal disease, often in a highly contagious state In view of these facts the health committee has recommended to the council to make the following new by-law —

> When any person is suffering from any contagious disease and when in the opinion of the medical officer of health the removal of such person to a suitable hospital or place of segregation and his detention or treatment therein are necessary for the protection of the public health the council may order and compel the removal and treatment of such person in such hospital or place of segregation and his detention therein until in the opinion of the medical superintendent of such hospital or place of segregation he has ceased to be in a contagious condition In the event of any such contagious person resisting such removal or detention any official of the council or any police constable or other person authorised thereto by the council and any official of the place of detention may employ such force as may be necessary to compel such removal and detention Any such person who resists such removal or resists or wilfully evades such detention shall be liable to a penalty not exceeding fifty pounds (£50) or in default of payment, to imprisonment for a period not exceeding three months

The Interpretation of the Wassermann Reaction

The London County Council has issued, for the use of its venereal treatment centres, a memorandum originally drafted by the pathologist of one of the London hospitals, and embodying certain additions suggested by other pathologists of treatment centres The enormous number of tests, which have been made during the ten years since the reaction was introduced, have left no doubt the memorandum states, as to the meaning to be attached to definitely positive or negative results in the great majority of cases, but in regard to certain points it cannot be said that universal agreement has been reached The conclusions suggested in these special cases represent only the general trend of opinion The Wassermann reaction is a quantitative one—i e , it depends on a certain phenomenon occurring to a certain degree and hence there will always be border line reactions, which, while showing a distinct departure from the normal, are not sufficiently marked to serve as a basis for a definite diagnosis save under special circumstances Such reactions, when they occur, must be carefully considered in relation to all the known facts of the case in question After discussing in succession the reaction in diagnosis, the effect of treatment on the reaction, the reaction in the control of treatment and the reaction as a criterion of infectivity, the following conclusions are given —

1 A well marked positive reaction is undoubted evidence of syphilitic infection with the few unimportant reservations outlined above

2 A single negative result has no value during the first few weeks of the disease At this stage the *sore* should be examined for the *Spirochæta pallida* and if the result be negative the blood should be tested after a short interval, during which no treatment has been given

3 A negative result in a patient undergoing treatment has no diagnostic value If the diagnosis be uncertain the test must be repeated after a treatment-free interval lasting for several weeks at least

4 A negative result in an untreated case exhibiting suspected secondary lesions almost excludes syphilis but never does so absolutely

5 In the later stages with certain exceptions, a rather higher proportion of undoubted syphilitic cases give negative results so that such a result while contraindicating a diagnosis of this disease especially if previous anti syphilitic treatment can be excluded must be regarded in relation to all other available evidence

6 In using the reaction to control treatment the ideal aimed at should be a persistently negative reaction following a prolonged and thorough course of treatment, as explained above This result, combined with the absence of all clinical signs, is the best evidence of on infectivity

7 A weak positive reaction must always be considered in relation to ll the known facts of the case and has little diagnostic value alone

The memorandum closes with drawing the attention of medical practitioners who wish to take advantage of the laboratory facilities provided by the local authorities to the following suggestions —

1 The facilities are intended for cases of venereal diseases in their *early and in all communicable stages*

2. The examination for spirochætes is most efficient when the patient attends for the purpose at the treatment centre

3 It is understood that the pathologists may refuse to perform any tests in the following circumstances : (*a*) when the material arrives in an unsatisfactory condition (*b*) when the form of particulars is not completely filled up by the practitioner

Enlightenment Campaign amongst American Recruits

Dr C F Bolduan director of the Bureau of Public Health Education for the City of New York, writes to us of the advantage taken of the opportunities of sexual enlightenment offered by the recruiting for the United States Army In New York City there were 188 exemption boards who medically examined more than 150,000 recruits. In cooperation with the New York Social Hygiene Society the City Department of Health prepared a pamphlet for distribution to the drafted men being examined and asked the examining officers to hand a copy to each man examined by them. The pamphlet, which is entitled "Universal Service and Physical Fitness," is of eight pages, and gives a graphic account of the devastating effects of venereal infection. One [illegible] of the [illegible] devoted to a telling [illegible] page is [illegible] between pictorial illustration of the triple alliance [illegible] alcohol, prostitution, and quackery, another [illegible] the theories of the necessity and justification of illicit intercourse. On the cover stands the motto Public health is purchasable Within natural limitations a community can determine its own death rate

Experiences of an American Venereal Dispensary

In the *American Journal of Public Health* for May Dr Alec N Thomson, of New York City, gives an account of the dispensary problems of gonorrhœa and syphilis as encountered in the work of the genito-urinary department of the Brooklyn Hospital Dispensary Established in 1904, by Dr Rathbun as sole worker, it now occupies 15 doctors at six afternoon seven evening, and two morning clinic sessions The aim of the clinic is to bring the patient under treatment and retain him until cured, and no pains are spared to ensure this When visits are omitted a reminder is sent in a sealed envelope, repeated again where unnoticed, and finally with the stamp, "Your last chance" Above the door of the waiting room to the clinic are two large signs reading "You must come to the clinic regularly for treatment," and 'Do not stop treatment until the doctor tells you that you are well" Each new case admitted to the dispensary also receives a ten page pamphlet upon venereal diseases Metal plates offering the facilities of the Department of Health for advice and diagnosis and of the Brooklyn Hospital Dispensary for the treatment of diseases of men have been placed in a number of saloon and factory toilets, replacing in many cases the quack signs Dr Thomson is convinced that it pays to advertise Publicity and education will, he says, deprive the quack of his biggest assets—mystery and ignorance Affiliation with such other bodies as the American Social Hygiene Association is essential to this end

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AWKWARD PRESCRIPTIONS

BY A W BROMLEY,
PHARMACIST

To a pharmacist an awkward prescription is one containing a chemical incompatible, an ambiguity an error, or an unusually large dose In the last case, the dose may be intentional on the part of the prescriber for some special or heroic reason, or merely a verbal or arithmetical slip The obvious course in all such difficulties is to appeal to the prescriber if he is accessible. But there are many cases where that is not possible or desirable. One cannot delay a prescription obviously urgent to consult the writer in a distant town I once posted a doubtful prescription to its author in the West-End It followed him to Scotland, and I received it back in four days That is an extreme case but I have had delays of several hours, where prescribers live quite close to me, and a delay till the next morning

Many doctors would perhaps define an incompatible either as a "messy mixture" or as a chemical decomposition Neither definition is good An incompatible mixture may be quite elegant and, of course, many decompositions are not incompatibilities I would rather define a chemical incompatibility as a decomposition in which the chemical or physical properties of the result are different from the intention disclosed Of course, an incompatibility may not be chemical. An acid added to an emulsion would generally produce a physical incompatibility Most incompatibles that arise in practice are crude and obvious, but a few are interesting If a trifling omission addition or substitution will set them right, all but the fussiest pharmacists would do that without troubling the prescriber But of course the change must be of no medicinal importance Sometimes, without medical knowledge, it is possible to anticipate the normal prescriber s mental process in a prescription difficulty and deduce his inevitable decision For example I omitted glycerine from a potassium permanganate gargle Obviously they could not be put together, nor could a substitute be introduced, the prescriber s way out of the difficulty was inevitable. To assume that he would discard his carefully selected main ingredient for the sake of a demulcent would be to convict him of weak judgment in prescribing An equally clear case was a mixture of quinine and iron citrate, and sal volatile The latter might be wanted for its alkalinity, its stimulating effect or s a flavour The first two purposes are defeated by the cidity of the citrate, it can only act as a flavour So an ppropriate quantity of lemon and nutmeg essences was ubstituted. A mixture of sodium salicylate, sodium bicarbonate and tincture of iron was cured by substituting iron and ammonium citrate for the tincture In this case the prescriber was told and he approved, in the others the matter was decided as too trivial to communicate

A dangerous but extremely common incompatible is a mixture of solution of strychnine with alkalies Yet it is by no means undispensable Strychnine is slightly soluble in water and it becomes a question of where the danger point is Theoretically the most that is safe is about half a grain (50 minims of solution) in 8 oz But a drachm in 6 oz is dispensed every day, with a ' shake" label of course Trouble could only arise through a very remote coincidence The patient would have to pour out very carefully without shaking all but the last few doses and then reform and shake thoroughly Such procedure would yield doses ranging from 0 6 to 1 5 or more of the dose prescribed Pharmacists do not like these mixtures that rely upon the patient s intelligent obedience. I should dispense a tablespoon mixture double size with ounce doses if the strength exceeded 10 minims per ounce.

A very interesting incompatible is the decomposition of chloral hydrate by alkalies It can scarcely be regarded as dangerous or even seriously objectionable, probably the decomposition is not always completed in mixtures occurring in practice. If it is completed the patient gets the sudden action of chloroform instead of the gradual action of chloral As a rule, pharmacists would dispense as written without comment, if the prescriber himself brought the prescription one might raise the point

Ambiguities arise through bad writing close similarities in the names of drugs and synonyms that have more than one meaning It is curious how one can master the details of a prescription by inference from its general construction when not a single word can be read Only when a bad writer happens to be also an eccentric prescriber does he create insurmountable difficulties for the dispenser

Sometimes possibly only in moments of irritation a prescriber expects one to carry the process of deduction too far I once took a defective prescription to its author, and after correcting it he asked what I should have done had he been inaccessible On my mentioning two alternatives he remarked Either would have suited me and been better for the patient than this delay ' In another case I received an urgent order for 3-minim amyl nitrite capsules Not having them I sent the messenger hurrying to my nearest colleague Next day the doctor told me that considering the obvious emergency I should have supplied 5-minim capsules rather than send the messenger away One can see the point of view here without agreeing A pharmacist cannot solve doubts by guess only by reasoning which must at least be sound to himself.

Correspondence.

"Audi alteram partem."

THE "HÆMOGREGARINE" OF TRENCH FEVER

To the Editor of THE LANCET

SIR,—In THE LANCET of Sept 8th, in a paper entitled 'Trench Fever or P U O, associated with the Presence of a Hæmogregarine," Captain Lyn Dimond R A.M C, announces the discovery of hæmogregarines in human blood If this statement should prove to be correct, then a discovery of the first magnitude has been made, as such parasites, though occurring in reptiles amphibia, &c. and in some mammals (dog, rat jerboa) have not so far been found in man. In view of the importance of Captain Dimond's find, therefore, it behoves tropical workers and protozoologists critically to examine his results to see if they are well founded and accurate. A study of the somewhat rough pen and ink sketches which accompany the paper is certainly not convincing, and the feeling of doubt which these give rise to is increased when the life cycle described for the hæmogregarine is taken into account This as compared with the cycle which has been worked out for the hæmogregarine of the lizard and rat, is inaccurate in many respects, and is largely based on hypothesis with no definite facts to support it Further, even granting for a moment that the bodies seen are hæmogregarines, there is no evidence that they are pathogenic or the cause of trench fever This is borne out by a statement made by the author towards the end of his paper that since completing it he has had opportunities of confirming the presence of the hæmogregarines in a number of other cases of trench fever and also in addition in cases of D A H, complicated with some of the clinical signs of P U O and in one or two cases of definite benign tertian malaria It is strange if hæmogregarines are present in the latter disease that they have never been seen before by workers in tropical medicine I have said enough to show that urgent confirmation of the discovery is required and until this is forthcoming the matter must remain *sub judice* Recommendations have been made to puncture the lungs and other viscera in order to obtain venous blood a somewhat dangerous procedure for all and sundry to adopt. and flavine and other drugs have been used for treatment. There is no justification for this until it is definitely shown (1) that the bodies described are hæmogregarines and (2) that they are pathogenic and the cause of the disease. Sir David Bruce, President of the Society of Tropical Medicine and Hygiene and the Fellows generally will, I am sure, be only too pleased to give Captain Dimond the opportunity of demonstrating his parasites before them and expert opinion will then be available to test their validity

I am Sir, yours faithfully,

GEORGE C LOW M D,

Temp Captain, I M S Lecturer London School of Tropical Medicine Joint Secretary Society of Tropical Medicine and Hygiene

Bentinck-street W Sept 15th, 1917

To the Editor of THE LANCET

SIR.—In your issue of Sept 8th you publish an article by Captain Lyn Dimond, entitled ' Trench Fever or P U O, associated with the Presence of a Hæmogregarine ' From a leading article in the same issue, and from personal communications and interrogations which I have received since the appearance of this work I gather that there is in some quarters a tendency to regard Captain Dimond's findings favourably and to conclude that he has discovered in man a new protozoal parasite—a hæmogregarine—which is the cause of trench fever I therefore ask your permission to make a few comments from the point of view of a protozoologist upon this remarkable publication

In the first place I would point out that Captain Dimond s statements are frequently very difficult for a protozoologist to understand, since he displays a singular disregard for the language of our science, and I may perhaps have failed to seize his meaning in consequence. When for example, he

BREAST-FEEDING AND THE NERVOUS INFANT

To the Editor of THE LANCET

SIR —I am probably not alone in having felt puzzled by the explanation recently offered by Dr H C Cameron in your columns,[1] of a certain form of restless behaviour in infants For it is a startling suggestion that a baby is not uncommonly so baffled by being called upon to take up extra uterine existence that it loses its head and makes a complete hash of the whole business of feeding This is neuropathic inheritance with a vengeance!

There can be no question that in this article, as in all his writings on the subject of childhood, Dr Cameron has drawn an essentially accurate clinical picture But in attributing its cause to the child's endowment with an unstable nervous disposition he has, I believe, disregarded certain factors which need consideration There are, at any rate, other things capable of producing something resembling very closely the state of affairs to which he is calling attention

For example, in any investigation into the causes of restlessness crying, and reluctance to feed, which may be marked for several days after birth, it is necessary to take into account the variable effect on the child's brain of the stress of labour Signs of pressure on the head are commonly seen in the form of œdema of the scalp, moulding of the skull, and subperiosteal extravasation of blood Not very rarely death may precede or quickly follow delivery from intracranial venous laceration, without any sign of outward violence From a consideration of these facts it would seem reasonable to suppose we must expect considerable difference in the initial behaviour of infants corresponding to the ease or difficulty of their journey through the pelvis I have certainly regarded the symptoms of several babies which corresponded closely to Dr Cameron's description as explained in this way, and have used sedatives with apparent benefit In one such case a midwife told me she believed that the infant "had a bad headache" so clearly did it display a dislike to light or movement Her diagnosis was probably accurate enough, and for such a child it would clearly be wise to adopt the line of treatment suggested "A half-darkened room," "absolute quiet" and 'gentle handling" form wise advice though I believe attempts at feeding may largely be left in abeyance until the condition passes off. Chloral will be beneficial in lessening cerebral irritability But one would suppose that had it to overcome anything so formidable as a precocious display of neurotic instability, its administration would have to be prolonged very considerably

Whether the explanation here offered for some cases is right or not it cannot of course, apply to instances where the child s behaviour is normal at the start and unrest supervenes later But, again, there are causes of some importance which need to be eliminated before it is wise to conclude that the infant is "neurotic' or its cry "hysterical' Dr Cameron's statement that the mother's rôle in establishing successful breast-feeding is confined to the possession of an adequately shaped nipple, is not very helpful It omits altogether the important provision that the milk which leaves the nipple must be of a kind which will not disturb the baby Normally of course it is perfectly innocuous But there can be no question that it may in certain circumstances be so unsuitable as to produce pain, vomiting, a refusal to feed, and all the symptoms of unrest which he discusses

The common fear of nursing women to include this or that article of food in their diet is not entirely without a basis of reason But any disturbance resulting from indiscretions of food is trivial when compared with the effects of drastic purgation to which many are accustomed to resort and which is still perhaps the most rigid feature of obstetrical ritual The woman is lucky who escapes such purgation during labour, she catches it almost invariably throughout the puerperium Paradoxically enough the intestinal fatigue, the flatulence headache and general misery thus produced are labelled ' constipation" and as a daily action of some kind is insisted upon enemata of large volume are commonly added Nowhere are enema rashes to be seen with such frequency as in maternity hospitals and the teaching on this point is dogmatic stern and impressive When the toxæmia which must accompany such a state be considered, it is not surprising that the infant is disturbed The midwife or physician in attendance on nursing women has only to be sufficiently enthusiastic about the need to keep the bowels open, and one can guarantee with a very fair degree of safety the baby before long will "almost jump out of her arms" One can understand its fear of the breast milk, even its cautious distrust of the bottle until the contents have been proved harmless One cannot grudge it any relief to be gleaned from a few doses of chloral hydrate But to attribute the dyspepsia as due primarily to an inherited nervous instability would be distinctly unjust to the baby It would, moreover render the chance of successful breast-feeding remote, and leave the cause of its failure undetected

In THE LANCET of Nov 4th 1916, I described another common pathological condition of the mother which is certainly productive of unrest in the infant Disease in connexion with the teeth whether or not responsible for obvious maternal ill health, frequently reacts on the child in a manner perhaps comparable to the effect produced by purgatives In outlining certain features of the behaviour of babies thus affected, I referred to their tendency to be of poor physique, to their refusal to feed, and to the vomiting 'of an intractable type, variable from day to day, sometimes interrupting the feed, sometimes following soon after its conclusion, at others interfering with sleep and accompanied by attacks of screaming which may last for hours The vomiting has a tendency to be frequent, copious, and forcible and the woman rightly concludes that her milk disagrees with the baby" Though somewhat more emphasis is there laid on the vomiting, the account tallies sufficiently with Dr Cameron's to make me wonder whether dental disease or some other source of toxæmia in the mother may account for some of "thin, meagre' children he describes

In bringing forward these causes of disturbance which lead commonly to a failure of breast nursing, I do not wish to imply that all children are endowed at birth with an equally placid temperament but rather to emphasise the need for care lest one include in the class of case Dr Cameron has described conditions which have a quite different etiology, and which demand in consequence investigation along quite different lines —I am, Sir, yours faithfully

Gray's Inn W C Sept 9th 1917 HAROLD WALLER

PSYCHIATRY IN ENGLAND

To the Editor of THE LANCET

SIR,—In answer to Dr H de M Alexander, I admit the methods of the English Commissioners in Lunacy *re* recovery rate may have their faults, but for comparison's sake it suffices to know that they themselves are far from being content with (what I still call) 'the lamentable fact" that recovery rate in asylums has not increased in spite of all that has so far been done' I believe I am right in saying that the Scottish Board of Commissioners admit the same fact without giving any definite cause for this reproach to psychiatry and to the laws which have in England hindered the early treatment in proper environment of mental disease

As to the ages of patients admitted I maintain that if cases are taken in hand promptly and the patients are studied clinically in all aspects, the best arrangements being made for treatment and environment we get many recoveries in quite elderly people

I am delighted that Dr Alexander feels himself justified in stating 'There must be few if any asylums in which the want of proper departmentisation of cases occurs" I wish he would in confidence give me the names of English asylums public and private, in which he knows that this practice is carried out to the extent I consider is necessary Dr Alexander s quotation from a work of my valued friend the late Sir Thomas Clouston is a very true one, but may I remind Dr Alexander that that splendid clinical student of mental diseases has made many statements in his numerous books in accordance with my expressed views and experience ?

The law of lunacy as carried out in England differs to a great extent from that of Scotland, which allows much more scope for early treatment either in proper homes or in asylums So far we have tried in vain to get our lunacy laws altered in this direction and it has been very disheartening work to sit on committees with this object and with no result, as I well know to my cost.

I am, Sir, yours faithfully

Bournemouth Sept. 16th 1917 L A WEATHERLY M D describes his "hæmogregarine 'as undergoing multiplication by the "sporulation" of a "parthenogenetic gametocyte" into "merozoites," he produces a *feeling of bewilderment* in his readers, for this, translated from the *patois* of protozoology, as applied to Sporozoa, into common English, means that the bisexually produced germs, or spores of the parasite are asexually produced young produced unisexually It is difficult to know what meaning to attribute to such propositions but reference to the illustrations permits one to make a plausible guess Are not Figs I–IV, the "parthenogenetic gametocytes," in reality sketched from dried and stained cellular elements of the human spleen or liver? And are not the "20 parthenogenetically produced merozoites" of Fig V in reality 19 bacteria? Their resemblance to these things is undeniable, whilst their lack of resemblance to any known stages in the life history of a hæmogregarine is equally undeniable We now know the life histories of a few species of hæmogregarines almost completely of several others in considerable detail, and of the numerous remainder in consistent fragments But nothing like the remarkable development outlined by Captain Dimond for his ' hæmogregarine" has previously been brought to light Indeed there is *not only* no hæmogregarine which develops like his, but there is no known *protozoon* whatever like it To the best of my knowledge it is unique in many ways among all known organisms

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[1] THE LANCET 1917, ii 345

Figs. VI and VII are more difficult of interpretation It is not possible to discover what they really represent They bear, indeed some resemblance to hæmogregarines, but also display some notable differences The intracorpuscular "parasites" of Fig VIII are also difficult of interpretation They appear to inhabit red blood corpuscles of extraordinarily small size (one is two and a half, the other slightly over three microns in diameter) and to be themselves far smaller than any ordinary hæmogregarines On comparing the descriptions with the figures, and taking the rest of the ' *life history" of the "protozoon" into account no proto*zoologist would, I believe, care to express a very definite opinion on these *forms until* he had *studied* the actual specimens from which they were drawn There are so many pitfalls in the path of the unwary hunter of blood parasites, and the cautionary stories of "*Paraplasma*" and '*Anaplasma*" are still so fresh in our memories, that one is chary of expressing an opinion prematurely in such matters

After reading Captain Dimond's article, therefore I immediately wrote to ask him to allow me to examine his preparations I thought his published statements might become intelligible when taken in conjunction with the actual objects of his descriptions He must, I inferred possess a very large number of preparations containing all the stages which he describes or mentions and a vast number of intermediates, since he describes with much confidence a life cycle of *great complexity* and *novelty* In answer to my request I have received a letter (from Major W Byam) in which it is *stated* that a *further report* is in preparation and when that is complete he "hopes *to prepare* and forward smears" for my examination "For the *present*," he says, "we feel that both microscopical and clinical demonstrations would take more time than we can afford" This being the case, therefore, there is little further discussion possible at present It is only just to remark, however that the account of the "hæmogregarine of trench fever" can only be accepted when a complete series of preparations is produced in evidence, or when its existence and its almost incredible life cycle are independently confirmed by a protozoologist of unquestionable competence and repute

It is unfortunate that Captain Dimond did not take the precaution of consulting a protozoologist with first-hand knowledge of the hæmogregarines, and also of consulting the somewhat extensive literature dealing with this group of protozoa *before recording* his findings Had he done so he could hardly have published his work in the form in which it now appears He would also probably have saved himself much trouble and labour For example, it appears that he is now seeking the further developmental stages of his "hæmogregarine" *in* lice which he regards as being with "extreme probability," the intermediate hosts He says further, that ' the presence of *such* large numbers of rats in the trenches which come into close association with our troops seems to favour this *conclusion*" Assuming that he means that the rats, and not the trenches, associate with our troops, it is extremely difficult to follow his train of thought *It is true* that a louse—*Hæmatopinus stephensi*—to which he refers is believed to be the intermediate host *of the* hæmogregarine of the Indian gerbil But our common rat harbours a hæmogregarine whose *life history* happens to have been worked out in considerable detail It is nothing like that described by Captain Dimond and its intermediate host is not a louse It is not even an insect So far as our knowledge extends it is the exception rather than the rule for a hæmogregarine to have an insect for its invertebrate host

There is much other matter in Captain Dimond's paper which lays itself open to, and even invites, the most destructive criticism I will not, however, further trespass upon your space My sole object in writing this letter is to call attention to the extremely debatable character of the "hæmogregarine of trench fever" I cannot but regard it as a duty to the unfortunate sufferers from this affliction to express my misgivings, as a protozoologist, to those members of the medical profession who have a practical interest in the subject but who are unversed in *our science* It is with considerable apprehension that I contemplate the possibility *of future investigators exploring the lungs, livers*, spleens, and other organs of sick soldiers in the hunt for a "hæmogregarine" whose very existence I can only regard as highly hypothetic *I do not deny* that Captain Dimond *may* have discovered the parasite which causes trench fever At present I cannot discover what he has discovered in the way of parasites But I will venture to predict, Sir that when you stated in your leading article that "the broad facts of the life-cycle of the parasite appear to be established" you expressed an opinion to which no competent protozoologist will subscribe

I am, Sir, yours faithfully,

CLIFFORD DOBELL

Imperial College of Science Sept. 17th 1917

THE LUMLEIAN LECTURES AND MEDICAL RESEARCH

To the Editor of THE LANCET

SIR,—Some of us have watched with breathless interest the great struggle of the cardiologists in your columns conducted under the heading, "The Lumleian Lectures and Medical Research" The origin of *the struggle* was humorous Dr F Smith, in a pungent but rather true letter, pointed out that if we labour the obvious enough we shall make a new discovery of its obviousness, and I was guilty in the next week of pointing out that the *English study* of heart disease was, if judged by the lectures, already out of date Then the "new" school, as led by their *formidable* and renowned chief, created a dramatic surprise by disclosing a grievous lack of knowledge of the literature *of the* most important cause of heart disease, and finally the two schools approached one another much as did the famous Mac's of music hall fame—with sweet words, gradually changing towards fierce blows

It is *now*, I think, a suitable time for the medical profession to join the new school I have been advocating As I write this I have before me a special number of *American Medicine* for June, 1915 in which by invitation I wrote an article on the *prevention* of rheumatism and heart disease I have also the second annual report of the 'Winifred Masterson Burke Relief *Foundation*" New York, in which institution the suggestions I put forward are being put into practice with most encouraging results Let me state explicitly that I do not pretend that my article was responsible for this forward *step* but taken with the recent work on rheumatism I, with others, may justly claim to have lent such an enterprise reasonable scientific support

Two years after this article the enterprise is in full activity in America Nearly *20 years* after acute rheumatism was shown in this country to be an infection no such effort has been attempted We are still worrying about mitral stenosis and digitalis and think that hospitals can alone deal with the problems of heart disease

Let us now think of the service that institution has already done to practical medicine and *mourn* over the wordy controversies upon academic details that have marred our English medical literature —I am Sir, yours *faithfully*,

F JOHN POYNTON

Sept. 12th 1917

BREAST-FEEDING AND THE NERVOUS INFANT

To the Editor of THE LANCET

SIR,—I am probably not alone in having felt puzzled by the explanation, recently offered by Dr H O Cameron in your columns,[1] of a certain form of restless behaviour in infants For it is a startling suggestion that a baby is not uncommonly so baffled by being called upon to take up extra uterine existence that it loses its head and makes a complete hash of the whole business of feeding This is neuropathic inheritance with a vengeance!

There can be no question that in this article, as in all his writings on the subject of childhood, Dr Cameron has drawn an essentially accurate clinical picture But in attributing its cause to the child's endowment with an unstable nervous disposition he has, I believe, disregarded certain factors which need consideration There are, at any rate, other things capable of producing something resembling very closely the state of affairs to which he is calling attention

For example, in any investigation into the causes of restlessness crying, and reluctance to feed, which may be marked for several days after birth, it is necessary to take into account the variable effect on the child's brain of the stress of labour Signs of pressure on the head are commonly seen in the form of œdema of the scalp moulding of the skull and subperiosteal extravasation of blood Not very rarely death may precede or quickly follow delivery from intracranial venous laceration, without any sign of outward violence From a consideration of these facts it would seem reasonable to suppose we must expect considerable difference in the initial behaviour of infants corresponding to the ease or difficulty of their journey through the pelvis I have certainly regarded the symptoms of several babies which corresponded closely to Dr Cameron's description as explained in this way, and have used sedatives with apparent benefit In one such case a midwife told me she believed that the infant "had a bad headache," so clearly did it display a dislike to light or movement. Her diagnosis was probably accurate enough, and for such a child it would clearly be wise to adopt the line of treatment suggested "A half-darkened room" "absolute quiet" and 'gentle handling" form wise advice, though I believe attempts at feeding may largely be left in abeyance until the condition passes off Chloral will be beneficial in lessening cerebral irritability But one would suppose that had it to overcome anything so formidable as a precocious display of neurotic instability its administration would have to be prolonged very considerably

Whether the explanation here offered for some cases is right or not it cannot, of course, apply to instances where the child's behaviour is normal at the start and unrest supervenes later But, again, there are causes of some importance which need to be eliminated before it is wise to conclude that the infant is "neurotic" or its cry 'hysterical" Dr Cameron's statement that the mother's rôle in establishing successful breast-feeding is confined to the possession of an adequately shaped nipple, is not very helpful It omits altogether the important provision that the milk which leaves the nipple must be of a kind which will not disturb the baby Normally of course it is perfectly innocuous But there can be no question that it may in certain circumstances be so unsuitable as to produce pain, vomiting, a refusal to feed, and all the symptoms of unrest which he discusses

The common fear of nursing women to include this or that article of food in their diet is not entirely without a basis of reason But any disturbance resulting from indiscretions of food is trivial when compared with the effects of drastic purgation to which many are accustomed to resort and which is still perhaps the most rigid feature of obstetrical ritual The woman is lucky who escapes such purgation during labour, she catches it almost invariably throughout the puerperium Paradoxically enough the intestinal fatigue, the flatulence headache and general misery thus produced are labelled "constipation' and as a daily action of some kind is insisted upon enemata of large volume are commonly added Nowhere are enema rashes to be seen with such frequency as in maternity hospitals and the teaching on this point is dogmatic stern, and impressive When the toxæmia which must accompany such a state be considered, it is not surprising that the infant is disturbed The midwife or physician in attendance on nursing women has only to be sufficiently enthusiastic about the need to keep the bowels open, and one can guarantee with a very fair degree of safety the baby before long will "almost jump out of her arms" One can understand its fear of the breast milk, even its cautious distrust of the bottle until the contents have been proved harmless One cannot grudge it any relief to be gleaned from a few doses of chloral hydrate But to attribute the dyspepsia as due primarily to an inherited nervous instability would be distinctly unjust to the baby It would, moreover render the chance of successful breast-feeding remote, and leave the cause of its failure undetected

In THE LANCET of Nov 4th, 1916, I described another common pathological condition of the mother which is certainly productive of unrest in the infant Disease in connexion with the teeth whether or not responsible for obvious maternal ill health, frequently reacts on the child in a manner perhaps comparable to the effect produced by purgatives In outlining certain features of the behaviour of babies thus affected, I referred to their tendency to be of poor physique, to their refusal to feed and to the vomiting 'of an intractable type, variable from day to day, sometimes interrupting the feed, sometimes following soon after its conclusion, at others interfering with sleep and accompanied by attacks of screaming which may last for hours The vomiting has a tendency to be frequent copious, and forcible, and the woman rightly concludes that her milk disagrees with the baby" Though somewhat more emphasis is there laid on the vomiting, the account tallies sufficiently with Dr Cameron's to make me wonder whether dental disease or some other source of toxæmia in the mother may account for some of "thin meagre" children he describes

In bringing forward these causes of disturbance which lead commonly to a failure of breast nursing, I do not wish to imply that all children are endowed at birth with an equally placid temperament, but rather to emphasise the need for care lest one include in the class of case Dr Cameron has described conditions which have a quite different etiology and which demand in consequence investigation along quite different lines —I am, Sir yours faithfully

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I am, Sir, yours faithfully

Bournemouth Sept 16th 1917 L A WEATHERLY, M D

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[1] THE LANCET 1917, ii 345

BRITISH HEALTH RESORTS

To the Editor of THE LANCET

SIR,—I was asked some time ago to prepare for Messrs A and C Black a guide to British health resorts, endeavouring, as far as possible, to bring into prominence the many attractions which our own country offers in the way of first-class spas and seaside resorts Apart from the well known spas, however, there are many wells and springs scattered through the country which have at least a local repute and are of some historic interest

I shall be very grateful to any members of the profession or others who will kindly send me details of any such wells, &c , in their district, so that the chapter it is proposed to include on this subject may be as complete and informative as possible All our big spas had small beginnings, and who knows some of these at present neglected sources of mineralised water may be of value and blossom out into health resorts ? It is, at any rate, believed and hoped that once the war is over most people will think twice before taking a journey to Germany and leaving money, which could with equal benefit and greater propriety be spent at home, in the blood stained hands of the Teuton

No one who was caught napping at Nauheim Homburg, Kissingen, or Wiesbaden, at the end of July 1914, will willingly enter Germany again in search of health That is pretty certain —I am, Sir, yours faithfully,

T D LUKE, M D R U I

St Ronans Venlaw Brae, Peebles *Sept 15th 1917*

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

J H M. Sandison to be temporary Surgeon

ARMY MEDICAL SERVICE

Col S C Philson is retained on the Active List under the provisions of Arts 120 and 522, Royal Warrant for Pay and Promotion and to be Supernumerary

Col James C Morgan, from Half pay List, retires on retired pay on account of ill-health

Lieut.-Col Hubert A Bray, C M G to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division

TERRITORIAL FORCE.

Major (temp Lieut Col) M Dunning to be Assistant Director of Medical Services and retain his temporary rank whilst so employed

ROYAL ARMY MEDICAL CORPS

The undermentioned are granted temporary rank as stated —As Lieutenant-Colonel: Lieut Col E J Moore, C B As Majors Major C E M Lowe R G A. T F and Major C J Caddick, R F A T F As Captains Capt E P W Wedd Yeo , T F and Capt P T Spencer Phillips R F A

Major B H V Dunbar, D S O to be acting Lieutenant Colonel whilst holding a special appointment

Temp Major J N Gunn Canadian A M C to be acting Lieutenant-Colonel while commanding Canadian Field Ambulance

Temp Major E F Eliot relinquishes the acting rank of Lieutenant Colonel on reposting

F Lessore C A.M C , to be temporary Honorary Major without pay and allowances

Temp Capt G M Davis to be temporary Major

Temp Capt B L Nelley Canadian Army Dental Corps to be temporary Major

To be temporary Captains W C Stevenson (Home Hospital Reserves) R. C Mullins (S A Medical Corps) R D Kidd (S A. Medical Corps) H Symonds (S A. Medical Corps) W Smith (S A Medical Corps)

C A. Moseley (British West Indies Regiment) to be Surgeon Captain

Temporary Lieutenants to be temporary Captains G H Stoble A Levesque C K. Church

To be temporary Honorary Lieutenants *C C Allen J H Dorman*

Officers relinquishing their commissions Temp Hon. Capt F Fraser Temp Hon Capt K M Walker Temp Hon Lieut J R Dick *and Temp Hon Lieut. F F Young having ceased to be employed with No 1 British Red Cross Hospital* Surg Capt C A Moseley (British West Indies Regiment) *Temp Capts G W* Anderson and E R Grieveson Temp Lieuts E W Squire *J Harper* (on account of ill health) C T Darwent (on account *of ill health*) J C Auchencloss (on account of ill health)

SPECIAL RESERVE OF OFFICERS

Major H G Smeeth to be acting Lieutenant-Colonel whilst in command of a Field Ambulance

To be Lieutenants H D Apergis J L. Rowlands D J Mackinnon and J Joels (from Glasgow University Contingent, O T C) F E Bendix (from University of London Contingent O T C) H Taylor and H G Morris Jones (from Manchester University Contingent, O T C) F M H Sanderson H B Renton G L. Malcolm Smith, and F Jones (from Edinburgh University Contingent O T C) C Reid (from Aberdeen University Contingent, O T C) *C Wood*

TERRITORIAL FORCE.

Major (acting Lieut. Col) A D Ducat to be Major and to retain the acting rank of Lieutenant-Colonel.

Major (temp. Lieut. Col.) M Dunning is restored to the establishment and retains his temporary rank on vacating an appointment as Assistant Director of Medical Services

Capt (acting Lieut.-Col) L A. Dingley relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt A. Baxter to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

Capts G P Chappel and W G Mitchell to be *Majors*

Capt G H Cowen is seconded for duty with War Hospital.

Capt J S Arthur from Unattached List, to be Captain

Lieut. W E *Smith* to be Captain

T H Savory from Norfolk Regiment, to be *Lieutenant*

C H Gibb to be Lieutenant

Capt. F A J Mayes relinquishes his commission on account of ill-health contracted on active service and is granted the honorary rank of Captain

DEATHS IN THE SERVICES

Surg Gen William *Simson Pratt*, C B R.A.M C (retired) at Bideford on Sept 8th aged 68. Formerly he was Principal Medical Officer in the Southern Command and in 1900 he was appointed Principal *Medical* Officer at Gibraltar For his services in the Nile Expedition in 1884-85 he was mentioned in despatches and promoted Surgeon *Major* He reached the rank of Lieutenant Colonel in 1893 and of Colonel in 1902

Obituary.

FREDERIC WILLIAM KIDD, M D DUB , L R C P & S

PROFESSOR OF MIDWIFERY AT THE ROYAL COLLEGE OF *SURGEONS* I IRELAND EX MASTER OF AND CONSULTING SURGEON TO *THE* COOMBE LYING-IN HOSPITAL AND GYNÆCOLOGIST TO THE MEATH HOSPITAL.

WE announced last week the sudden death of Dr Freder William Kidd, which took place at his residence in Dubli on Sept 5th He received his medical education at Trinit College and in the Carmichael School, Dublin Obtainin an arts degree in 1880, he qualified in the following year b taking the L R C S Irel , graduating M D at the University of Dublin six years later Subsequently he took th Licentiateship of the Royal College of Physicians of Ireland In 1884 he was elected a Fellow of the Royal Academy of Medicine in Ireland, served on the council as an honorary member, and was President of the *Obstetrical* Section. His many other appointments included those of examiner in gynæcology at the Royal College of Surgeons in Ireland and examiner in midwifery at the University of Dublin He was also a Past-President of the Irish Medical Association and an ex member of the council of the British Gynæcological Society

Dr Kidd held a position of great respect among his colleagues, and in both clinical and academic circles his loss will be much felt, for the post of visiting gynæcologist to the Meath Hospital and County Dublin Infirmary and the chair of midwifery in the schools of surgery have been vacated by his death, after many years of able and untiring service He was a frequent contributor to the Transactions of the Royal Academy of Medicine in Ireland in the departments of his profession in which he was interested

Many years ago Dr Kidd was a well known *Rugby* footballer and as a member of Lansdowne Club he gained his International cap and played *v* Scotland at Belfast in 1877 and *v* England at Dublin in 1878 He leaves four sons, all of whom are serving with His Majesty's Forces His kindly personality and the unfailing interest he took in the welfare of his students gained for him a wide circle of friends, to whom the news of his death has come with a sense of personal loss

THE LATE DR JOHN ROBERTS THOMSON, V D—Dr Thomson, who died at his residence Monkchester Bournemouth, at the age of 73, on Sept 11th was educated at Edinburgh University, and qualified in 1865 by taking the Licentiateship of the Royal College of Surgeons of Edinburgh A year later he graduated M D of Edinburgh University, and subsequently, in 1880, became a Fellow of the Royal College of Physicians of London He was consulting physician to the Royal Victoria and West Hants Hospital Bournemouth, the Firs Home for Consumption, and the Royal National Sanatorium for Consumption and Diseases of the Chest He was a Vice President of the British Medical Association, having been President in 1891, when the Association held its annual meeting at Bournemouth, and President of Council Dr Thomson was a justice of the peace for Hants and the borough of Bournemouth and an alderman of the Hants county council

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Dr Christoph Socin, assistant at the *Basle* Institute of Pathology, has been appointed professor of pathological anatomy and director of the Pathological Institute at Lausanne

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Lieut A G Dunn, R A M C, received his medical education at Newcastle-on Tyne, and qualified in 1903 Prior to joining up he was in practice at Newcastle-on Tyne, and held an appointment at the Royal Victoria Infirmary in that city

Died of Wounds

Capt B Woodhouse R A M C, received his medical education at University College Hospital, London, and qualified in 1913 He joined the R A.M C shortly afterwards, and was promoted Captain in March, 1915

Wounded

Capt A. L Anthony, R A.M C, attached Royal Warwick Regiment
Capt N J H Gavin, M C, R A M C
Capt J S Taylor, R A M C, attached Rifle Brigade
Capt R W Hodgson-Jones, R A M C
Lieut W G McConnell, R A M C, attached Yorks and Lancs Regiment
Lieut-Col J Barkley, R A.M C
Capt W C D Maile, R A M C
Capt A H Falkner, R A.M C, attached Royal Lancs Regiment
Capt L J Moir, R A M C
Capt G W Stanley, R A M C
Capt P A Doyle, R.A M C
Lieut. M J Macauley R A.M C
Capt L R Shore, M C, R.A M C
Capt L M Weeks, R A M C
Capt W L R Wood, M C, R A M C, attached Royal Field Artillery
Lieut H Snape R A M C
Capt T H Whittington R A M C, attached Essex Regt
Lieut Col H Gibson, R A M C
Capt. J Lyons, R A.M C
Capt H Moore M C R A M C
Capt J F W Sandison, R A.M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualty among the sons of medical men is reported —

Major H S Semple, M C Royal Engineers, killed in action, eldest son of Dr H F Semple, of Budleigh Salterton, Devon

THE HONOURS LIST

Clasp to the Victoria Cross

The highest award for bravery and devotion to duty in the face of the enemy has again been bestowed upon a member of the medical profession Captain N G Chavasse who has, most regretfully be it recorded, paid the supreme sacrifice The official announcement is as follows —

Capt Noel Godfrey Chavasse V C, M C, late R A.M C, attached Liverpool Regiment

For most conspicuous bravery and devotion to duty when in action. Though severely wounded early in the action whilst carrying a wounded soldier to the dressing station Captain Chavasse refused to leave his post and for two days not only continued to perform his duties but in addition went out repeatedly under heavy fire to search for and attend to the wounded who were lying out. During these searches although practically without food during this period, worn with fatigue and faint with his wound he assisted to carry in a number of badly wounded men over heavy and difficult ground By his extraordinary energy and inspiring example he was instrumental in rescuing many wounded who would have otherwise undoubtedly succumbed under the bad weather conditions. This devoted and gallant officer subsequently died of his wounds

Captain Chavasse was the younger of the twin sons of the Lord Bishop of Liverpool and was educated at Liverpool College and at Oxford qualifying in 1912. His death from wounds was recorded in THE LANCET of August 18th (p 259) whilst the awards of the M C and of the V C were recorded in our issues respectively of Jan 22nd 1916 (p 215) and of Nov 4th 1916 (p 806)

The following promotions of and awards to medical officers are also announced —

To be Brevet Lieutenant Colonel

Major (temp Lieut Col) R M Carter, I M S

Distinguished Service Order

Temp Capt Lewis Anderson, R.A M C

For conspicuous gallantry and devotion to duty He carried out his duties for 48 hours without relief attending to over 100 cases and working under the most adverse conditions He was exposed throughout to intense and heavy fire of shell and gas shells, which rendered it necessary for him to work in a mask The following night after his battalion had been withdrawn he returned to search for wounded in the front line which was still in close contact with the enemy and after working for several hours under heavy shell fire he collected and evacuated all his wounded having displayed magnificent devotion and the utmost contempt for danger throughout

Capt (Temp Lieut Col) Norman Cecil Rutherford, R A.M C

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station He worked continuously under heavy shell fire evacuating the wounded from the forward area, and it was owing to his splendid example of devotion that the work was efficiently carried out

Major Robert Archer Lloyd, I M S

Lieut (temp Capt) Arthur Frederick Isbell Patterson, R A M C

Military Cross

Capt John Ernest Affleck, Canadian A M C

For conspicuous gallantry and devotion to duty He crawled along a shallow and much-exposed trench to rescue a very severely wounded officer whose life depended upon an immediate operation With the assistance of a stretcher bearer he managed to get the wounded man out on a blanket to a place where he could be evacuated The task was a very slow and dangerous one by reason of their being completely exposed to enemy snipers but Capt Affleck did not hesitate to risk his life in order to do all that was humanly possible for this wounded officer

Capt John Arthur Bell, R A.M C

For conspicuous gallantry and devotion to duty during a heavy bombardment He proceeded along a road which was exposed to the most intense shell fire in order to attend to four wounded officers He dressed their wounds and remained with them until they were evacuated by motor ambulance which was only accomplished with the greatest difficulty owing to the heavy shelling His absolute disregard of danger and devotion to duty amidst terrific shell fire were exceptionally splendid and beyond all praise

Capt John Bernard Cavenagh, R A M C, Spec Res

For conspicuous gallantry and devotion to duty when in charge of bearers He exposed himself to shell fire for 48 hours with splendid fearlessness keeping all the time in touch with aid posts in the captured line thereby ensuring a rapid evacuation of the wounded

Capt Clarence Hamul Denyer, R A M C

For conspicuous gallantry and devotion to duty when in command of divisional bearers It was due to his fearless and capable handling of his party that the evacuation of the wounded was carried out with rapidity and success

Temp Capt Charles Dickson, R A M C

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station Under an intense high explosive and gas shell bombardment the building was *partially* wrecked and the patients were in danger of death from gas poisoning He at once personally organised a working party to replace the anti gas screens and take other precautions for the safety of the wounded this necessitated working in the open under extremely heavy fire, during which his total disregard of safety set a most inspiring example to his men By his energy and devotion the lives of many badly wounded men were saved

Temp Capt Charles Dundee, R A.M C

For conspicuous gallantry and devotion to duty He worked for three days, bandaging the wounded under fire and successfully evacuating every case in his battalion almost as soon as they occurred Over 500 cases passed through his hands and he displayed a splendid spirit of energy and devotion

Temp Lieut David Hammond Fraser, R A.M C

For conspicuous gallantry and devotion to duty Whilst his battery was under very heavy gas bombardment a shell wrecked the officers mess dug-out and buried two officers and five men Lieut Fraser helped by a corporal most gallantly assisted to rescue the buried men and restore respiration entering the dug-out several times until he eventually collapsed from the gas On recovering consciousness he again attempted to enter the dug out, but was prevented from doing so Later he collapsed again and remained unconscious for a long time It was due to his promptness and energy that no more than two of the gassed men succumbed

Temp Capt Augustus Joseph Hickey, R A M C

For conspicuous gallantry and devotion to duty when in command of an advanced dressing station He worked with the utmost energy and disregard of danger for 48 hours under shell fire, during which time he passed through more than 700 wounded His skill and devotion saved many lives

Temp Capt William Bird Loveless, R A.M C

For conspicuous gallantry and devotion to duty in tending the wounded under heavy shell fire Although wounded in the face early in the day he did not leave his post but continued with his work until he came out of action with his battalion displaying splendid keenness and devotion to duty

BRITISH HEALTH RESORTS

To the Editor of THE LANCET

SIR,—I was asked some time ago to prepare for Messrs A and C Black a guide to British health resorts, endeavouring, as far as possible, to bring into prominence the many attractions which our own country offers in the way of first-class spas and seaside resorts Apart from the well known spas, however, there are many wells and springs scattered through the country which have at least a local repute and are of some historic interest

I shall be very grateful to any members of the profession or others who will kindly send me details of any such wells, &c, in their district, so that the chapter it is proposed to include on this subject may be as complete and informative as possible All our big spas had small beginnings, and who knows some of these at present neglected sources of mineralised water may be of value and blossom out into health resorts? It is, at any rate, believed and hoped that once the war is over most people will think twice before taking a journey to Germany and leaving money, which could with equal benefit and greater propriety be spent at home, in the blood stained hands of the Teuton

No one who was caught napping at Nauheim Homburg, Kissingen, or Wiesbaden, at the end of July, 1914, will willingly enter Germany again in search of health That is pretty certain —I am, Sir, yours faithfully,

T D LUKE, M D R U I

St Ronans Venlaw Brae Peebles Sept 15th 1917

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

J H M Sandison to be temporary Surgeon

ARMY MEDICAL SERVICE

Col S C Philson is retained on the Active List under the provisions of Arts 120 and 522, Royal Warrant for Pay and Promotion and to be Supernumerary

Col James C Morgan from Half pay List, retires on retired pay on account of ill health

Lieut. Col Hubert A Bray, C M G, to be temporary Colonel whilst employed as Assistant Director of Medical Services of a Division

TERRITORIAL FORCE

Major (temp Lieut Col) M Dunning to be Assistant Director of Medical Services and retain his temporary rank whilst so employed

ROYAL ARMY MEDICAL CORPS

The undermentioned are granted temporary rank as stated —As Lieutenant-Colonel: Lieut Col E J Moore, C B As Majors Major C B M Lowe R G A. T F and Major C J Caddick R F A T F As Captains Capt. E P W Wedd Yeo T F and Capt P T Spencer Phillips R F A

Major B H V Dunbar D S O to be acting Lieutenant Colonel whilst holding a special appointment

Temp Major J N Gunn, Canadian A.M C to be acting Lieutenant-Colonel while commanding Canadian Field Ambulance

Temp Major E F Eliot relinquishes the acting rank of Lieutenant-Colonel on reposting

F Lessore C A M C, to be temporary Honorary Major without pay and allowances

Temp Capt G M Davis to be temporary Major

Temp Capt B L Neiley Canadian Army Dental Corps to be temporary Major

To be temporary Captains: W C Stevenson (Home Hospital Reserves) R. C Mullins (S A Medical Corps) R D Kidd (S A Medical Corps) H Symonds (S A Medical Corps) W Smith (S A Medical Corps)

C A. Moseley (British West Indies Regiment) to be Surgeon Captain

Temporary Lieutenants to be temporary Captains G H Stoble A Levesque C K. Church

To be temporary Honorary Lieutenants: C C Allen J H Dorman

Officers relinquishing their commissions Temp Hon Capt. F Fraser Temp Hon Capt K M Walker Temp Hon Lieut J R Dick and Temp Hon Lieut. F F Young having ceased to be employed with No 1 British Red Cross Hospital Surg Capt. C A. Moseley (British West Indies Regiment) Temp Capts G W Anderson and E R Grieveson Temp Lieuts E W Squire J Harper (on account of ill health) C T Darwent (on account of ill health) J C Auchencloss (on account of ill health)

SPECIAL RESERVE OF OFFICERS

Major H G Smeeth to be acting Lieutenant-Colonel whilst in command of a Field Ambulance

To be Lieutenants: H. D Apergis J L Rowlands, D J Mackinnon and J Joels (from Glasgow University Contingent, O T C) F E Bendix (from University of London Contingent O T C) H Taylor and H G Morris-Jones (from Manchester University Contingent, O T C), F M H Sanderson H B Renton G L. Malcolm Smith, and F Jones (from Edinburgh University Contingent O T C) C Reid (from Aberdeen University Contingent, O T C) C Wood

TERRITORIAL FORCE.

Major (acting Lieut. Col) A D Ducat to be Major and to retain the acting rank of Lieutenant-Colonel.

Major (temp Lieut Col.) M Dunning is restored to the establishment and retains his temporary rank on vacating an appointment as Assistant Director of Medical Services

Capt. (acting Lieut Col) L A Dingley relinquishes his acting rank on ceasing to command a Field Ambulance

Capt A. Baxter to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

Capts G P Chappel and W G Mitchell to be Majors

Capt G H Cowen is seconded for duty with War Hospital.

Capt J S Arthur from Unattached List, to be Captain

Lieut. W E Smith to be Captain

T H Savory from Norfolk Regiment, to be Lieutenant.

C H Gibb to be Lieutenant

Capt F A. J Mayes relinquishes his commission on account of ill health contracted on active service and is granted the honorary rank of Captain

DEATHS IN THE SERVICES

Surg Gen William Simson Pratt, C B R.A.M C (retired), at Bideford on Sept. 8th aged 68 Formerly he was Principal Medical Officer in the Southern Command and in 1900 he was appointed Principal Medical Officer at Gibraltar For his services in the Nile Expedition in 1884–85 he was mentioned in despatches and promoted Surgeon Major He reached the rank of Lieutenant-Colonel in 1893 and of Colonel in 1902

Obituary.

FREDERIC WILLIAM KIDD, M D DUB, L R C P & S I,

PROFESSOR OF MIDWIFERY AT THE ROYAL COLLEGE OF SURGEONS IN IRELAND EX MASTER OF AND CONSULTING SURGEON TO THE COOMBE LYING-IN HOSPITAL AND GYNÆCOLOGIST TO THE MEATH HOSPITAL

WE announced last week the sudden death of Dr Frederic William Kidd, which took place at his residence in Dublin on Sept 5th. He received his medical education at Trinity College and in the Carmichael School, Dublin Obtaining an arts degree in 1880, he qualified in the following year by taking the L R C S Irel, graduating M D at the University of Dublin six years later Subsequently he took the Licentiateship of the Royal College of Physicians of Ireland In 1884 he was elected a Fellow of the Royal Academy of Medicine in Ireland, served on the council as an honorary member, and was President of the Obstetrical Section. His many other appointments included those of examiner in gynæcology at the Royal College of Surgeons in Ireland and examiner in midwifery at the University of Dublin He was also a Past-President of the Irish Medical Association and an ex member of the council of the British Gynæcological Society

Dr Kidd held a position of great respect among his colleagues, and in both clinical and academic circles his loss will be much felt, for the post of visiting gynæcologist to the Meath Hospital and County Dublin Infirmary and the chair of midwifery in the schools of surgery have been vacated by his death, after many years of able and untiring service He was a frequent contributor to the Transactions of the Royal Academy of Medicine in Ireland in the departments of his profession in which he was interested

Many years ago Dr Kidd was a well known Rugby footballer and as a member of Lansdowne Club he gained his International cap and played *v* Scotland at Belfast in 1877 and *v* England at Dublin in 1878 He leaves four sons all of whom are serving with His Majesty's Forces His kindly personality and the unfailing interest he took in the welfare of his students gained for him a wide circle of friends, to whom the news of his death has come with a sense of personal loss

THE LATE DR JOHN ROBERTS THOMSON, V D—Dr Thomson, who died at his residence Monkchester, Bournemouth, at the age of 73, on Sept 11th, was educated at Edinburgh University and qualified in 1865 by taking the Licentiateship of the Royal College of Surgeons of Edinburgh A year later he graduated M D of Edinburgh University, and subsequently, in 1880, became a Fellow of the Royal College of Physicians of London He was consulting physician to the Royal Victoria and West Hants Hospital Bournemouth, the Firs Home for Consumption and the Royal National Sanatorium for Consumption and Diseases of the Chest He was a Vice President of the British Medical Association, having been President in 1891 when the Association held its annual meeting at Bournemouth, and President of Council Dr Thomson was a justice of the peace for Hants and the borough of Bournemouth and an alderman of the Hants county council

DR CHRISTOPH SOCIN, assistant at the Basle Institute of Pathology, has been appointed professor of pathological anatomy and director of the Pathological Institute at Lausanne

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Lieut. A. G Dunn, R A.M C, received his medical education at Newcastle-on Tyne, and qualified in 1903 Prior to joining up he was in practice at Newcastle-on Tyne, and held an appointment at the Royal Victoria Infirmary in that city

Died of Wounds

Capt B Woodhouse R A.M C, received his medical education at University College Hospital, London, and qualified in 1913 He joined the R.A.M C shortly afterwards, and was promoted Captain in March, 1915

Wounded

Capt A L Anthony, R.A M.C, attached Royal Warwick Regiment
Capt N J H Gavin M C R.A.M.C
Capt J S Taylor, R.A.M.C, attached Rifle Brigade
Capt R W Hodgson-Jones, R A.M C
Lieut W G McConnell, R A.M C, attached Yorks and Lancs Regiment
Lieut Col J Barkley, R A.M G
Capt W C D Maile, R.A.M C
Capt A. H. Falkner, R.A.M.C, attached Royal Lancs Regiment
Capt. L J Moir R.A.M C
Capt G W Stanley, R A.M C
Capt. P A. Doyle R.A M C
Lieut M J Macauley, R A M C
Capt L R Shore, M C, R A.M C
Capt L M Weeks, R A M C
Capt W L R Wood, M.C, R.A.M.C, attached Royal Field Artillery
Lieut H Snape R.A M C
Capt T H. Whittington, R.A.M C, attached Essex Regt
Lieut Col H Gibson R.A.M C
Capt. J Lyons, R.A.M C
Capt H. Moore M.C, R.A M.C
Capt J F W Sandison, R.A.M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualty among the sons of medical men is reported —

Major H S Semple, M C Royal Engineers killed in action, eldest son of Dr H F Semple, of Budleigh Salterton, Devon

THE HONOURS LIST

Clasp to the Victoria Cross

The highest award for bravery and devotion to duty in the face of the enemy has again been bestowed upon a member of the medical profession, Captain N G Chavasse who has most regretfully be it recorded, paid the supreme sacrifice The official announcement is as follows —

Capt Noel Godfrey Chavasse V C, M.C, late R A.M C, attached Liverpool Regiment

> For most conspicuous bravery and devotion to duty when in action. Though severely wounded early in the action whilst carrying a wounded soldier to the dressing station, Captain Chavasse refused to leave his post, and for two days not only continued to perform his duties but in addition went out repeatedly under heavy fire to search for and attend to the wounded who were lying out During these searches, although practically without food during this period, worn with fatigue and faint with his wound, he assisted to carry in a number of badly wounded men over heavy and difficult ground By his extraordinary energy and inspiring example he was instrumental in rescuing many wounded who would have otherwise undoubtedly succumbed under the bad weather conditions. This devoted and gallant officer subsequently died of his wound.

Captain Chavasse was the younger of the twin sons of the Lord Bishop of Liverpool, and was educated at Liverpool College and at Oxford qualifying in 1912. His death from wounds was recorded in THE LANCET of August 18th (p 259) whilst the awards of the M C and of the V C were recorded in our issues respectively of Jan. 22nd 1916 (p 215) and of Nov 4th 1916 (p 806)

The following promotions of and awards to medical officers are also announced —

To be Brevet Lieutenant Colonel

Major (temp Lieut Col) R M Carter, I.M S

Distinguished Service Order

Temp Capt Lewis Anderson, R.A.M C

> For conspicuous gallantry and devotion to duty He carried out his duties for 48 hours without relief attending to over 100 cases and working under the most adverse conditions He was exposed throughout to intense and heavy fire of shell and gas shells, which rendered it necessary for him to work in a mask. The following night after his battalion had been withdrawn he returned to search for wounded in the front line which was still in close contact with the enemy and after working for several hours under heavy shell fire he collected and evacuated all his wounded having displayed magnificent devotion and the utmost contempt for danger throughout.

Capt (Temp Lieut Col) Norman Cecil Rutherford, R.A.M C

> For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station He worked continuously under heavy shell fire evacuating the wounded from the forward area, and it was owing to his splendid example of devotion that the work was efficiently carried out.

Major Robert Archer Lloyd, I M S

Lieut (temp Capt) Arthur Frederick Isbell Patterson, R A M C

Military Cross

Capt John Ernest Affleck, Canadian A.M C

> For conspicuous gallantry and devotion to duty He crawled along a shallow and much-exposed trench to rescue a very severely wounded officer whose life depended upon an immediate operation. With the assistance of a stretcher bearer he managed to get the wounded man out on a blanket to a place where he could be evacuated. The task was a very slow and dangerous one by reason of their being completely exposed to enemy snipers, but Capt Affleck did not hesitate to risk his life in order to do all that was humanly possible for this wounded officer

Capt John Arthur Bell, R A.M C

> For conspicuous gallantry and devotion to duty during a heavy bombardment He proceeded along a road which was exposed to the most intense shell fire in order to attend to four wounded officers. He dressed their wounds and remained with them until they were evacuated by motor ambulance which was only accomplished with the greatest difficulty owing to the heavy shelling His absolute disregard of danger and devotion to duty amidst terrific shell fire were exceptionally splendid and beyond all praise

Capt John Bernard Cavenagh, R A.M C Spec Res

> For conspicuous gallantry and devotion to duty when in charge of bearers. He exposed himself to shell fire for 48 hours with splendid fearlessness, keeping all the time in touch with aid posts in the captured line, thereby ensuring a rapid evacuation of the wounded.

Capt Clarence Hamul Denver, R.A.M C

> For conspicuous gallantry and devotion to duty when in command of divisional bearers It was due to his fearless and capable handling of his party that the evacuation of the wounded was carried out with rapidity and success

Temp Capt Charles Dickson, R.A.M.C

> For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station Under an intense high-explosive and gas shell bombardment the building was partially wrecked and the patients were in danger of death from gas-poisoning He at once personally organised a working party to replace the anti gas screens and take other precautions for the safety of the wounded this necessitated working in the open under extremely heavy fire, during which his total disregard of safety set a most inspiring example to his men By his energy and devotion the lives of many badly wounded men were saved

Temp Capt Charles Dundee, R A.M C

> For conspicuous gallantry and devotion to duty He worked for three days, bandaging the wounded under fire and successfully evacuating every case in his battalion almost as soon as they occurred Over 500 cases passed through his hands, and he displayed a splendid spirit of energy and devotion.

Temp Lieut David Hammond Fraser, R A.M C

> For conspicuous gallantry and devotion to duty Whilst his battery was under very heavy gas bombardment a shell wrecked the officers mess dug-out and buried two officers and five men Lieut Fraser helped by a corporal, most gallantly assisted to rescue the buried men and restore respiration, entering the dug-out several times until he eventually collapsed from the gas. On recovering consciousness he again attempted to enter the dug-out, but was prevented from doing so Later he collapsed again and remained unconscious for a long time It was due to his promptness and energy that no more than two of the gassed men succumbed.

Temp Capt Augustus Joseph Hickey, R.A.M C

> For conspicuous gallantry and devotion to duty when in command of an advanced dressing station He worked with the utmost energy and disregard of danger for 48 hours under shell fire during which time he passed through more than 700 wounded His skill and devotion saved many lives

Temp Capt William Bird Loveless, R A.M C

> For conspicuous gallantry and devotion to duty in tending the wounded under heavy shell-fire Although wounded in the face early in the day he did not leave his post, but continued with his work until he came out of action with his battalion, displaying splendid keenness and devotion to duty

Temp Capt Anthony John McCreadie, R A M.C

For conspicuous gallantry and devotion to duty under heavy shell fire and in most trying circumstances He worked alone and incessantly for 36 hours in the open attending to the wounded and on two occasions he carried men under cover and dressed them He evacuated all the wounded with admirable rapidity and efficiency and his coolness and disregard for personal safety under fire afforded a magnificent example to all ranks He has displayed similar gallantry on other occasions

Capt John Morrison Milne, R A.M C

For conspicuous gallantry and devotion to duty When a dug out containing combustion products was blown in and the inmates buried he procured oxygen cylinders and played them into the dug-out thereby saving their lives He also assisted most untiringly in digging out the men, who owe their lives to his promptness and gallantry under heavy shell fire

Temp Capt Samuel Ernest Picken, R A M C

For conspicuous gallantry and devotion to duty in going forward under heavy shell fire and attending to the wounded in advanced trenches and shell holes He remained in the shelled area for a long period working incessantly and efficiently at the dressing and evacuation of the wounded He has always shown the same gallant spirit and devotion to duty

Capt James Calvert Spence, R A.M C , Spec Res

For conspicuous gallantry and devotion to duty in proceeding to a battery that was suffering heavily from intense enemy shell fire, and continuing to search blown in dug outs and tend the wounded under heavy fire He displayed exceptional coolness and gallantry on this occasion and on many previous occasions he has carried out his duties with magnificent devotion

Temp Capt Hugh Frederic Wickens, R A.M C

For conspicuous gallantry and devotion to duty in attending to the wounded whilst the camp was being heavily shelled The dressing station was totally unprotected and when it was eventually destroyed by enemy shell fire he showed splendid initiative and coolness in re-establishing his station elsewhere continuing to clear the wounded and do his work in the most gallant and devoted manner He has on several previous occasions displayed conduct of the same high order

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The names of the following medical officers have been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with military operations in the field —

Capt W B Marshall M C, R A.M C Maj W McConaghy R A M C

And the names of the following for valuable medical services rendered in connexion with the war, including certain officers engaged in medical work, though not members actually of the profession —

Col G G Adams Temp. Maj T S Allan Temp. Qrmr and Hon Lt. T Allen Maj W E A. Armstrong I M S Maj J A. Anderson Maj R Y Anderson Lt Col F H Appleby Capt T. Armour

Capt. W G Ball Temp Lt Col G A Bannatyne Capt A. S Barnes Lt. Col Sir J Barr, Qrmr and Hon Maj J H W Beach Lt. Col F W Begbie Lt Col J R Benson Maj R A Bickersteth Surg Gen W G Birrell Col L J Blandford Temp Capt. J Bowes Capt E C Bradford Qrmr and Hon Maj T F Brake, ret. pay Maj C Bramhall Lt. Col H Bramwell Maj H. A. Bransbury Temp Capt C W J Brasher Lt Col G A T Bray Temp Capt R. H Bremridge Capt E A. P Brock Temp Capt F W Broderick Lt Col J F Brodie Qrmr and Hon Capt. F Bruce, ret. pay Temp Maj H W Bruce Lt Col H. E Bruce-Porter Temp Capt R Buchanan Lt Col G H Bull I.M S ret. pay Col W H Bull Temp Lt Col D Buncombe Col P C Burgess; Temp Capt. J Burnford Col E Butt Temp Lt Col J B Byles

Col R Caldwell Capt F G Caley Lt Col E. M Callender Temp Capt W K Carew Temp Lt Col A. Carless Temp Capt J E Carruthers Lt. Col W P Carson I M S Temp Lt Col A H Carter Lt Col C W Cathcart Hon Temp Lt Col H. Chaffer Maj A. J Chambers ret pay Temp Capt E Chambers Lt Col J Clayton White I M S Col Sir J R A Clark Lt Col T H. M Clarke Lt Col T H F Clarkson Lt. Col G J Coates Col. W Coates C B Lt Col M A T Collie I.M S Temp Capt. A. Compton Col B B Connolly C B ret pay Temp Lt. Col H G Cook Lt Col M P Corkery Capt. E M Corner Temp Capt. W B Cosens Lt Col R Cottell, Capt L Courtauld Lt. T Croft Col. A E J Croly Lt Col Sir W R Crook Lawless Maj H A. Cummins Maj E N Cunliffe Lt Col R O Cusack ret pay

Col J H Daly Temp Maj W R Dawson Capt C S Deane Temp Capt S H Denyer Temp Capt. J R Dickson Temp Maj C B Dubell Temp Capt E L Dobson Col J R Dodd, ret. pay Temp Lt-Col A P Dodds-Parker Capt G H Dominy Capt. J S C Douglas Lt Col V G Drake-Brockman, I M S Temp Capt. J D Duncan

Surg Gen J D Edge C B - Lt Col. C W Edwards Lt Col F W Ellis

Lt Col N Faichnie Temp Capt N M Falkiner Maj A. C Farquharson Lt Col Sir J Fayrer Temp Capt W Fell Maj E G Ffrench Capt. G L. Findlay Temp Capt W T Finlayson Capt N S Finzi Col H H Forman Temp Capt A. A. Forty

Temp Lt Col T H Gibbon Qrmr and Hon Lt T Gibbs Capt W Gibbs Lloyd Qrmr and Hon Maj J Gillman Capt E E Glynn Lt Col G M Goldsmith Temp Lt. Col E Goodall Capt. G W Goodhart Surg Maj J F Gordon Dill Maj A. M Gossage Capt. A. H Gosse Maj D J Graham Maj E Gray Maj T W Griffith Temp Capt A Griffiths Col. J Griffiths Temp Capt. W Griffiths Surg Gen Sir W L Gubbins K C B M V O

Col R. I D Hackett Temp Maj J H Hall Edwards Lt Col R H Hall Temp Qrmr and Hon Lt A. E Hanrahan Lt Col T W C H Hamilton Temp Maj L. C V Hardwicke Lt. Col. L W Harrison Maj G P D Hawker Capt F S Hawks Qrmr and Hon. Capt R Hawkey ret pay Qrmr and Hon Lt. C Hayward Lt. Col. M L. Hearn ret pay Temp Capt J P Helliwell Maj R W W Henry Temp Capt. S L Hinde Temp Capt. A C Holden Maj W A L Holland Maj C H. Hopkins Capt. T J Horder Col. S S Hoyland Temp Maj D W Hume Temp Maj A. M Humphrey Capt F H Humphries

Lt. Col F S Irvine

Temp Capt. A L. Jackson Lt. Col C James Hon. Surg-Col. W C James Lt Col J B Jameson I.M.S Temp Capt. W W Jameson Maj J K. Jamieson, Qrmr and Hon Lt. E Janes Col. R. Jennings Qrmr and Hon Maj H Johnson Lt Col P H. Johnston; Temp Capt I Jones Capt A. A. Jubb

Temp Lt Col J Keay Temp Qrmr and Hon. Lt C R W Keefe; Temp Col F Kelly Temp Capt. A. M Kennedy Temp Lt.-Col H A Kidd Maj W Kirkpatrick.

Temp Capt A B Laidlaw; Temp Capt H. C T Langdon Temp Maj J S Law Temp Maj J R Lee Surg Gen C B P Lloyd V C C B ret pay Qrmr and Hon Maj H Lockhart Temp Lt Col J R Lord Col. T J R Lucas C B ret. pay Temp Capt A. Lundie Lt Col A A Lyle ret pay Maj J P Lynch

Surg Maj F F MacCabe Spec Res Temp Maj D K. MacDowell Maj W G Macfee Temp Maj C V MacKay Lt. Col. A. W MacKintosh Temp Capt P W Maclagan Temp Capt. J M. MacMillan Maj J N Macmullan Temp Maj H. G Magrath Lt Col J R Mallins Capt. W Martin Temp Maj H C Marr Qrmr and Hon Capt. J Mathews Qrmr and Hon. Lt. L Matthews Col W A. May C B Temp Capt. J T McCullagh Col. C H Melville Maj. A A W Merrick Lt. Col. J Mill. Lt-Col. L A. Mitchell Lt.-Col J M Moir Lt.-Col A. H Morris Temp Maj J S Morrow Lt Col R E R Morse Temp Lt. Col S Mort Temp Capt L W Mortimer Maj F W Mott Lt Col. C W M Moullin Maj A Mowat Temp Lt Col Sir B G A Moynihan, C B Temp Capt G Muir Capt H L Munro Temp Capt. C E. Murphy Lt Col Sir S F Murphy

Temp Maj E H T Nash Col L T M. Nash Temp Maj A. Neve Col F P Nichol Temp Maj C Noon.

Temp Qrmr and Hon. Lt. J Ogden Col C P Oliver Temp Capt. N H Oliver Temp Capt J F O Malley Temp Maj L. Owen.

Lt Col H K Palmer Lt. Col Sir A. Pearce-Gould Temp. Capt R B F M Pearse Temp Capt J H Peek Capt. C E Petley Temp Capt. A. Phillips Lt Col E V A Phipps Temp Lt A. C. Pickett Bt Col E M Pilcher Qrmr and Hon Capt. A. J Pilgrim Capt H Pinto-Leite Lt Col D A. Power Temp Lt.-Col. W T Prout Temp Maj F C Purser

Col W J R Rainsford ret pay Capt. C F Read Lt. Col W L. Read Lt Col E S Reynolds Temp Maj T B Rhodes Temp. Maj R G Riches Lt Col B Riddell Temp Maj N Roberts Temp. Maj F M. Rodgers Maj R. C Rodgers Hon Surg Col W M. Roocroft, Capt C H Rook Spec Res Temp Lt. Col F Romer Qrmr and Hon Lt H H Ross Temp Capt. J R H Ross Lt. Col C F Routh Lt Col W Rowney ret. pay Temp. Maj R G Rows Col A F Russell ret pay Maj G B Russell

Lt Col J V Salvage, Temp Capt. C Samut Temp Capt. W Sansom, Temp Maj W Scatterty Capt. H A. Scholberg Capt H R. Sedgwick Temp Maj G T S Sichel Temp Lt Col. A. Simpson Temp Maj G Simpson Maj M S Skirving Aust A.M C Col. H M Sloggett Lt Col P C Smith Hon Surg Gen W R Smith Lt Col W F Somerville Maj C G Spencer ret. pay Maj G H Spencer Temp Capt W S Sprent Temp Capt W S Stalker Maj H. K. Steele Spec Res. Temp Capt. L H Y. Stephen Surg Gen W F Stevenson C B Temp Capt. C R. Stewart Temp Maj H J Stiles, Maj W S V Stock Temp Capt. A. Stodart Walker Temp Capt F W S Stone Qrmr and Hon Lt. S Sully Temp Capt R W Sutherland Lt Col M Swaby Temp Capt. B Sweeten

Maj J Tait Temp Maj J G Taylor Temp Lt. Col. W Taylor Temp Lt Col. D G Thomson Lt Col H Thomson, I M S Lt.-Col S J Thomson I M.S Surg-Col A. Thorne Lt. Col E N Thornton S A M C Lt. Col J Tidbury Maj H W M Tims Maj W E F Tinley Qrmr and Hon Lt A. G Tod Col. C Todd Temp Qrmr and Hon Lt J Tonkinson Temp Maj F S Toogood; Lt. Col. T B A. Tuckey ret pay

Temp Lt Col. W J N Vincent Maj C W Vining Capt. S G Vintner

Maj D Walker Temp Capt R. R. Wallace Col C A. Webb Maj S G Webb Capt. F J Wethered Temp Hon Maj W I de C Wheeler Surg Lt. Col P H. Whiston Qrmr and Hon Capt J C B Whitehorn Lt Col. C W H Whitestone Temp Qrmr and Hon Lt L Whittaker Qrmr and Hon. Lt F B Wild Temp Capt. G C W Williams, Lt Col S R Wills Lt. Col. A. R Wilson Capt. J A. L Wilson Spec. Res Temp Lt. Col T B Winter Temp. Capt E W Witham Temp Qrmr and Hon Lt. J H Withy Temp Maj J C Woods Temp Lt Col J F Woodyatt Qrmr and Hon. Maj H Woolley Temp Maj R Worth; Temp Lt. Col W Wrangham Temp Lt-Col. G A. Wright Maj W E Wynter

Maj A. G Yates Temp Maj C S Young Lt.-Col G H Younge ret pay

MEDICAL BOARDS FOR FUNCTIONAL NERVOUS DISORDERS

We publish elsewhere an advertisement from the Ministry of Pensions, Westminster House, Millbank, inviting applications from registered medical practitioners in the counties of Westmorland, Lancashire, and Cheshire to serve on medical boards for the examination of, and the assessment of pensions for, men discharged from the Army for neurasthenia and functional nervous disorders We hope that the medical practitioners who are able to carry on this valuable work—it is suggested that the time required will not exceed five hours per diem—will make their applications promptly, stating the number of days per week on which their services will be available Our readers will, we know, approve of this sensible manner of obtaining assistance for purposes arising out of the war from medical men still in civilian practice

THE EMPLOYMENT OF AMERICAN PRACTITIONERS IN MILITARY HOSPITALS

We noted last week briefly the fact that in certain commands it had been decided to supersede British civilian practitioners serving with the forces by American medical men. In this way more British practitioners would be available to meet the pressing home needs which have been made clear by the work of the Central Medical War Committee But that committee has received no indication that a general policy of substitution has been prepared by the War Office, and in the absence of any organised plan it is certain that considerable muddle will ensue and justifiable chagrin be caused.

In all areas the American practitioners can be quite certain of finding on the part of their British colleagues a warm welcome. No feelings of resentment aroused by abrupt dismissals can possibly be directed against our professional colleagues and military allies, who for their part can only feel regret if they find themselves in places where their services are not urgently required when at other places the reverse position maintains We presume that the War Office will take counsel with the Central Medical War Committee sooner or later, because that body possesses all the detailed information necessary to say where a shortage of civilian medical practitioners is being felt, and therefore where most valuable relief could be afforded by the drafting into the war hospitals of American practitioners But it is a pity that some such coöperation between the War Office and the Statutory Professional Committees did not take place before active substitution commenced Already at several centres civil practitioners who for small emolument have done first-class work at military hospitals, have been suddenly sent back to their civilian practices, though for the conduct of those practices they had made proper arrangements in their absence, so that the community in which they practised was undergoing the minimum of inconvenience. Naturally this position is deeply felt by those officers while the unpleasantness could have been avoided by clear information to all concerned on what principle the substitution was being made.

It is clear that the training which they will receive in the war hospitals will be valuable to the American practitioners but this training might have been secured for them more effectively on some plan of dilution, under which some of those who had been discharging the duties previously would have remained at their places for the assistance of the new men drafted in According to this plan the reinforcement of the supply of practitioners could and would have been directed to the areas where it was urgently needed Economy would in this way have been effected by increasing gradually the number of whole-time men, but the services of many of the civilian practitioners who have been working at military hospitals have not been remunerated on such a scale that economy can play any great part in the action so far taken by the War Office We hope that before it is too late the War Office will decide to use the services of American practitioners upon some intelligible principle which will secure for the medical officers of our allies the advantages of proper training and for this country additional medical service in those areas—all well known to the Central Medical War Committee—where the need is felt

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THE WAR RECORD OF THE LONDON MEDICAL SCHOOLS THE THIRD YEAR OF WAR.

An inquiry into the war record of the larger metropolitan medical schools a year ago resulted in obtaining some interesting figures which were published in THE LANCET of Sep 23rd 1916 p 579 We are now able to complete some of these figures to include the third year of war but the records cannot possibly be entirely up to date The deans of all the schools desire to be kept closely informed of the records of their men who are serving in the Navy and Army Those schools which have furnished returns are given in alphabetical order —

St Bartholomew's —From Sept 1st 1916 to August 25th 1917 231 joined the Army and 40 joined the Navy 12 were killed in action 7 died on service 4 were drowned 4 died of wounds 33 were wounded 1 was missing and 4 were prisoners (of whom 2 have been exchanged) Mentioned in Despatches Army 138, Navy 2. Honours K.C.M.G., 1, C.B., 5, C.S.I., 1, C.M.G., 6, D.S.O. 12, Bar to Military Cross, 3, Military Cross, 32 D.S.C. 1, Knight of Grace of St John of Jerusalem, 1, Kaisar-i-Hind Medal, 1 Serbian Order of White Eagle (2nd Class 1, 4th Class 1 5th Class 4), 6, Legion of Honour, conferred by the French Republic, 2, Order of St Stanislas (2nd Class) 2, Officer of the Order de la Couronne, conferred by the King of the Belgians 1, Officer Military Order of Savoy, conferred by the King of Italy, 1 Promotions for valuable services at home, 12, Territorial Decoration 2 The completed numbers for the three years are therefore Joined, 1746 Died on Service, 65

St George's —The completed figures are Joined, 299 Died on service 8 (of whom 6 were killed), wounded, 10, Prisoners 2 Honours C.M.G 4, D.S.O., 5, M.C., 6, C.B., 2, Mentioned in Despatches, 40

King's College —The completed figures are Joined, 269 Died, 16 Honours K.C.B., 1, K.C.M.G., 3, K.C.V.O., 1, C.B., 3, C.M.G 5, Military Cross 8, D.S.O., 8, Mentioned in Despatches, 29 Legion of Honour (Grand Officier), 1, Commandeur de l'Ordre de Leopold, 2

London —The completed figures are Joined, 1278 Died 72. Honours K.C.B., 1 C.B., 3, C.M.G 8, D.S.O., 17, Knighthood 1, D.S.C., 2, Bar to Military Cross, 1, M.C., 59 Military Medal 2 Knight of Grace of St John of Jerusalem 1 Legion d'Honneur (Croix de Guerre), 1, Croix de Chevalier, 1 Order of the Crown of Italy, 1, Order of St Anne 3rd Class (with Swords), 2, Chevalier de l'Ordre de Leopold 1 Officier de l'Ordre de la Couronne, 1, Medal of St George (Russian) 1 Order of St Vladimir (Russian) 1, Order of the White Eagle 1, Mentioned in Despatches, &c., 110, Commended for services by Secretary of State for War 10

St Mary's —The completed figures are Joined 484 Died, 31 Honours C.B 3 C.M.G., 6, M.C., 11, D.S.O., 17, C.V.O 1 Order of the White Eagle 4th Class (with Swords) (Serbian) 1, Ordre de la Couronne (conferred by the King of the Belgians) 1 Legion d'Honneur (Croix de Guerre) (conferred by the President of the French Republic) 1, Order of St Sava, 5th Class Serbian) 1, Silver Medal for Valour (Italian) 1 Mentioned in Despatches 73, Promotions for valuable services at home 12, Wounded, 29, Prisoners of War 7 (of whom 4 have been exchanged), Missing 10

Middlesex —The completed figures are Joined, 428 Died, 22. Honours 29

St Thomas's —The completed list up to August 8th is as follows Joined 972 Died 39 Honours V.C., 1, K.C.B 1, K.C.M.G 2 C.B., 4, C.M.G., 11 M.V.O. 1, D.S.O 16 M.C 23 Bar to M.C 1, Mentioned in Despatches and for valuable service 101 men, 146 times, Order of the Hospital of St John of Jerusalem, 3 The foreign honours include French, 4, Serbian, 4, Belgian, 2, Egyptian, 1

University College Hospital —The completed figures are Joined 682 Died, 20 Honours K.C.M.G., 1, C.M.G., 14, C.B 4 D.S.O. (Bar 1) 10, V.C. (Clasp), 1, Legion of Honour (Croix de Commandeur), 1, Croix de Guerre, 2, Military Cross 12 First Bar to Military Cross, 3 Second Bar to Military Cross 1 Mentioned in Despatches (16 twice 2 three times) 102, Order of the White Eagle, 4th Class, with Swords (Russian) 1 Order of St Stanislas, 2nd Class, with Swords (Russian), 1

WAR DRAWINGS

The publishers of *Country Life* have now issued the first and second parts of War Drawings[1] executed in France by Lieutenant Muirhead Bone, and destined for the British Museum Each part will contain reproductions in one, two or more colours according to the character of the originals, and the low price has been fixed by the Government so that the publication as a whole, or in the form of separate plates, may have as wide a circulation as possible. Further particulars will be sent on application to the publishers

Part I contains among its ten drawings, several notable pictures amongst others a sympathetic portrait of Sir Douglas Haig a view of distant Ypres and one of the ruins of the famous Cloth hall and an admirable drawing of the lovely cathedral at Amiens round whose fleche the aeroplanes are careering like birds This picture is reminiscent of Mr Muirhead Bone's well known work as an etcher but public interest will probably centre upon his terrific drawing (Plate 7) of tanks going into action The centre of the illustration is occupied by an immense tank, jolly and terrible rolling off on its furious mission, and the plate is sure to become popular for framing

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[1] War Drawings. By Lieutenant Muirhead Bone Parts I and II., price 10s 6d. each net The series of six parts in portfolio £3 3s. net separate plates 2s 6d. each 1917 Published by authority of the War Office from the offices of "Country Life" Limited, 20 Tavistock street, Covent Garden London

Part II also contains ten plates, and all the drawings are characterised by the same vigour, love of truth, and sense of the picturesque and dramatic To our mind the most effective drawing in this series is Plate 14, showing the point of the River Somme, near Corbie, in which a wonderful colour effect is got by the use of a bright brown wash shaded with grey on a white ground Plate 20, "Erecting Aero planes," is in a completely different style Here in the portrayal of the rafters of the workshed and of the number less pulleys with their running bands, and of the tressels supporting the aeroplanes in *construction*, Mr Muirhead Bone has given full play to his love of patterns made by criss-cross lines, a love he so fully displayed in his famous etching of Charing Cross railway station under repair The drawing is richly tinted and elaborate, though simple, and creates its intended impression of intense activity coupled with business organisation We recommend these publications to our readers

BLINDED SOLDIERS' CHILDREN —Sir Arthur Pearson has issued a letter to the press saying that the success of the work at St Dunstan's has exceeded his most sanguine hopes He now feels that everything possible should be done to encourage the bachelor blinded soldiers to marry and surround themselves with children, and also to help those already married with their new babies who may arrive Joy will be brought into the soldiers' lives, a wife is a practical help to a sightless man, and the Empire will want the sons and daughters The Government makes a weekly allowance for children born before or within nine months of the soldier s discharge But there is, of course, no allowance for the children born later or for men who marry after leaving the Army because of their disablement Sir Arthur Pearson hopes to be able to raise a fund to provide an allowance of 5*s* per week until the age of 16 for each of these children who are not cared for by the State The total required, he thinks, will certainly amount to, and may even exceed, £250 000, and he enjoins on readers of this announcement to subscribe themselves and to help in collecting for this fund To the women of this country he is sure the object will particularly appeal. Requests for information and donations should be sent to Sir Arthur Pearson, 224, Great Portland street, London, W 1, the envelope being marked "Blinded Soldiers Children Fund"

THE IVORY CROSS —A meeting of those interested in the welfare of the dental profession and the Ivory Cross will be held at 31 and 32, Bedford street, Strand, W C, to day (Saturday, Sept 22nd), at 3 o clock prompt, when the memorandum and articles of association passed by the Board of Trade will be presented for the consideration of the dental profession

BETTER ARTIFICIAL LIMBS FOR SOLDIERS — Mr John Hodge, Minister of Pensions, presiding at a dinner held at the Trocadero on Sept 13th, said that the outstanding ideal before the Pensions Ministry was not the allotment of pensions so much as the restoration to useful citizenship of mutilated, wounded, and suffering men Wherever possible an endeavour would be made to restore men to the full use of their limbs, and he was seeking money from the Treasury for the purpose of starting a National Experimental Laboratory where we might get as near as possible to perfection in artificial limbs He desired to call to his aid the greatest skill and the greatest inventive faculty that the country possessed in order to get the best artificial limb possible In conclusion, he paid a high tribute to the medical profession, the greatness of whose work, he said, in the direction of restoration was beyond conception Incidentally, he mentioned that there were 900,000 pensioners on the books of his Department, and that this number was being increased by hundreds every week

At a private deputation on Sept 17th from the Roehampton Hospital Committee regarding the proposal to establish a National Experimental Laboratory for the purpose of designing and controlling the manufacture of artificial limbs for disabled soldiers, Mr Hodge reiterated his intention of taking immediate steps to seek the necessary funds for the establishment of a National Experimental Laboratory which might ultimately become a national factory for manufacturing limbs For the present he was opposed to the establishment of a national factory It was essential that the committee of management of the National Laboratory should be small, representative of surgeons and mechanical experts, and distinct from any committee managing hospitals for limbless men The laboratory committee would be directly responsible to the Ministry of Pensions

"WHAT EVERY SOLDIER SHOULD KNOW"—Some months ago the Military Hospitals Commission of Canada issued a poster giving information to the disabled soldier in regard to the possibilities of earning his own living, and setting out exactly what is being done for him in the way of pensions and the free supply of artificial limbs Under the title "What Every Soldier Should Know," this information is now being reprinted on a card about the size of a court-shaped envelope, and the cards are being widely distributed. A leaflet for civilians as well as soldiers is also being circulated in the form of a conversation with Private Pat, who says "I'll take whatever pension my old leg's worth, but blamed if I want to *live* on one, and *rust* away the rest of my life I want to be a man again as I was before, and make my own living, not sponge on other people How s it going to be done? Tell me all about it" Card and leaflet answer the question for him and for the employer The spread of information of this kind must be exceedingly useful, for it is not fully realised that with modern scientific training and appliances a large number of maimed soldiers may become self supporting members of society Copies of both card and leaflet can be obtained in the United Kingdom from Canadian Red Cross representatives and at all hospitals where Canadian soldiers are undergoing treatment.

"THE LEAGUE OF MERCY"—A War Bazaar is to be held at the Ritz Hotel, Piccadilly on Oct 24th and 25th next, to augment much needed funds for the general hospitals which are daily nursing back to health many poor patients as well as our wounded brave sailors and soldiers and victims of the air raids The bazaar is being organised by the presidents and lady presidents of certain districts of "The League of Mercy" All information can be had of the League of Mercy offices, 29, Southampton street, Strand, or the honorary organising secretaries, Mr W and Miss Andrews, 5, Belsize park, Hampstead.

AMERICAN WOMEN'S WAR HOSPITAL, PAIGNTON, SOUTH DEVON —An analysed report of the fourth thousand cases treated at this hospital has been issued by Dr D Pearce Penhallow, Major in the Medical Reserve Corps, United States Army, chief surgeon to the hospital, and its administrative officer There were in the hospital on August 19th, 1916 202 patients Up to May 20th, 1917, 982 more were received, totalling 1184 *received*, *but on* May 29th, 1917, there remained in the hospital *only* 184 cases a thousand having been discharged *as follows* For invaliding, 52, transferred for special *treatment to* various hospitals, 147, transferred to convalescent hospitals (mainly the Larches V A D Hospital, *Paignton*, and Totnes V A D Hospital), 559, discharged to *furlough*, 238, and died, 4 The average time in the hospital for the total 1000 discharged was *50* days There was a *total of* surgical cases of 650 (487 traumatic and 163 non traumatic), and a total of medical *cases of* 350 (infections, 124, non infectious, 220, diseases *of the eye*, 4, *diseases of* the skin, 11, epididymitis, 1, totalling 360, but minus 10 medical complications of surgical cases) The results of the treatment of 650 surgical cases were as follows Cured, 395, improved, 243, unimproved, 10, died, 2 (shrapnel wound of skull and cerebral abscess one and gunshot wound of chest and pul monary embolism the other) The results in the 350 medical cases were as follows Cured, 120, improved, 220, unim proved 8, died, 2 (cerebro-spinal meningitis one and nephritis the other) The operations before *admission* numbered 270 and after admission 263, 2 refusing operations The location of the injuries predominated in order *as follows* Thigh, lower leg, upper arm shoulder, back, forearm, hand, buttocks, foot knee, face (These did not include a total of 163 fractures, classified as *follows* head, 15, trunk, 25, upper extremity, 63, lower extremity, 60) The cause of the injuries was Shell, 371, bullet, 125, shrapnel, 36, grenade, 25 Under the heading of Complications of Wounds—*infections—are* following numbers Pyogenic, 283, gas bacillus, 15, tetanus, 1. The eight small pages of *the report* contain the statistical results of a large amount of good work.

Medical News.

THE WELFARE OF INFANCY —From Oct 1st to Dec 17th, on Mondays, from 5 30 to 6.30 P M , a course of elementary lectures on infant-care for mothers, teachers, infant-welfare workers, and others will be held at 1, Wimpole-street, W , under the auspices of the National Association for the Prevention of Infant Mortality The lecturers include Mr C F P Baly, Lady Barrett, Mr E A Barton, Dr Mildred Burgess Dr S Gilford Dr W J Howarth, Mr H R Jeremy, Dr Eric Pritchard, Dr Flora Shepherd, and Mr Hunter F Tod. The fee for the whole course of 12 lectures will be 5s , and for a single lecture 1s For tickets, which must be obtained in advance, application should be made to Miss Halford Secretary, National Association for the Prevention of Infant Mortality, 4, Tavistock square, London, W C

CERTIFICATES AS TO THE EYESIGHT AND HEARING OF "FIREMEN, EXAMINERS, OR DEPUTIES" EMPLOYED IN MINES UNDER THE COAL MINES ACT —The Home Secretary desires to draw the attention of medical practitioners in colliery districts and elsewhere to the provision in Section 15 (1) (c) of the Coal Mines Act, 1911, which requires that a person holding a certificate of qualification as a fireman, examiner, or deputy must subsequently, so long as he continues to be employed as a fireman, examiner, or deputy obtain every five years from a school, institution or authority approved by the Secretary of State, or from a duly qualified medical practitioner, a fresh certificate in the prescribed form to the effect that his eyesight is such as to enable him to make accurate tests for inflammable gas and that his hearing is such as to enable him to carry out his duties efficiently

THE LATE MR ARTHUR BADCOCK.—The death of Mr Arthur Badcock, of York occurred on Sept 16th, suddenly, though it was preceded by an illness of some months' duration Mr Badcock was the son of the late Rev J Badcock, D C L , vicar of Stroud and after completing his studies at the Leeds School of Medicine was appointed resident medical officer to the York Dispensary Subsequently he settled in practice in York, and became honorary medical officer to the Dispensary of which for some years he has been senior honorary officer He took a keen interest in its management and in all professional matters in the city and from July, 1914-1917, was President of the York Medical Society He was held in high esteem by his medical colleagues and by a wide circle of friends and patients

THE MEDICAL DEFENCE UNION —At the annual general meeting of the Medical Defence Union the chair was taken by the President Sir John Tweedy who was re-elected President for the ensuing year We have received a copy of the report of the council, which, as usual, forms interesting reading and testifies to the valuable work carried on by the Union, although that work has been beset by many difficulties owing to the continuance of the war Hundreds of members have had to claim urgent advice in respect of their 'joining up," owing to the consequent dislocation of medical practice, insurance and partnership agreements A great deal of extra work has thus been cast upon the Executive, and legal questions arising out of the war and the mobilisation of medical practitioners have had to be dealt with Letters asking advice have been received from members on active service from almost every part of the war arenas and it has naturally been a great satisfaction to the council—a condition of affairs upon which they may be congratulated—to know that, although thousands of miles may lie between their members and the Executive of the Union, yet, when in doubt or difficulty, the members naturally turn to the Union for help advice or assistance Certain claims by civilian medical officers for taking medical charge of troops in the absence of a military medical officer, which were held up or resisted by the Army authorities for various reasons, were placed in the hands of the Union and in every case satisfactory settlements were completed in the course of time The illegal assumption of Army medical rank, and even the holding of commissions as such by unqualified persons have been dealt with and in each case every assistance has been given to the satisfaction of the public authorities in connexion with these cases, where the prior history of the suspect was in the possession of the Executive As in former reports many cases are recorded with which the Union have had to deal during the year and they all demonstrate the benefits received by those who are members of the Union The solicitor s report also bears the impress of the war, for approximately one third of the 319 cases referred to him during the past two years had relation to the solution of partnership questions and the adjustment of matters arising out of appointments, whilst an equal number concerned questions arising under the National Insurance Act The respect in which the Union is held by those inclined to favour and support litigation of a speculative character has never been more clearly evidenced, and we congratulate the general secretary, Dr A G Bateman, and the solicitor, Mr W E Hempson, on a successful year's work

THE BIRTHDAY HONOURS —Among the recipients of the Kaisar i Hind gold medal of the first-class (see Birthday Honours published in THE LANCET of June 9th, p 885) the name of Lieutenant-Colonel K. Prasad, I M S , should have been included

WEST LONDON MEDICO CHIRURGICAL SOCIETY —The opening meeting of the session will be held on Friday, Oct 5th at the West London Hospital Dr A J Rice-Oxley, the newly elected President, will deliver an address on Medical Men as Portrayed in English Literature

THE PHARMACEUTICAL SOCIETY OF GREAT BRITAIN —The opening of the seventy sixth session of the School of Pharmacy will take place on Wednesday afternoon, Oct 3rd, when the Hanbury gold medal will be presented by the President to Professor H G Greenish, and the inaugural sessional address will be delivered by Lieutenant-Colonel E F Harrison, C M G

OFFICIAL DRAWINGS OF ADMIRALS AND GENERALS —Some months ago Mr Francis Dodd, the well known portrait painter and etcher, was given special facilities to obtain sittings from distinguished leaders in the Navy and Army Mr Dodd has completed many drawings and arrangements have been made to publish reproductions of them, with appropriate letterpress The first series will be issued shortly under the title of Generals of the British Army "

MEDICAL OFFICERS' SALARIES —The health committee of the South Shields Corporation dealt with an application from Dr D Morley Mathieson to consider the terms of his appointment as medical officer of health for the borough The committee obtained a summary of the salaries paid to medical officers in 17 towns ranging from 75 000 inhabitants to the size of South Shields (97,000), and this showed the average salary to be £686 per annum In these circumstances the committee recommends that Dr Mathieson's salary should be increased from £500 to £600

THE MEANING OF AMNESTY —The case of Mr Richard Hayes, formerly dispensary doctor at Rush and Lusk, co Dublin, has provoked in Ireland questions as to the meaning of amnesty Having taken part in the Sinn Fein rebellion, he was detained in England until at the granting of the general amnesty he was allowed to return to Ireland with others in like position He applied for reappointment to his dispensary, which had remained without a medical officer during his absence was reinstated by the board of guardians, and took up his work again Three weeks later an intimation was received from the Local Government Board in Ireland to the effect that the Board was unable to ratify his appointment because he had not yet received free pardon from the Crown

URBAN VITAL STATISTICS

(Week ended Sept 15th, 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons, the annual rate of mortality was 10·6, against 10·6 and 11 1 per 1000 in the two preceding weeks In London, with a population exceeding 4 000 000 persons the death rate was 9 8, or 2 1 per 1000 below that recorded in the previous week among the remaining towns the death rates ranged from 5·0 in Barrow in Furness, 5 1 in Bath, and 5 6 in Ealing to 17·2 in South Shields, 19 9 in Carlisle and 20·9 in Stockton on Tees. The principal epidemic diseases caused 351 deaths which corresponded to an annual rate of 1 1 per 1000 and included 262 from infantile diarrhœa, 39 from whooping-cough 22 from diphtheria, 18 from measles 6 from scarlet fever and 4 from enteric fever The deaths from diarrhœa, which had steadily increased from 63 to 320 in the eight preceding weeks fell to 262, and included 68 in London 21 in Liverpool, 15 each in Manchester and Leeds, and 13 in Birmingham The 633 cases of scarlet fever and 1037 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 31 above and 4 below the numbers remaining at the end of the previous week Of the deaths from all causes in the 96 towns 139 resulted from violence. The causes of 32 deaths were uncertified, of which 8 were registered in Birmingham 5 in Liverpool and 3 each in Stoke-on Trent and West Bromwich but not one in London.

Scotch Towns —The 246 deaths from all causes in Glasgow corresponded to an annual rate of 11·5 per 1000, and included 15 from infantile diarrhœa, 11 from whooping-cough 2 from diphtheria, and 1 each from measles and scarlet fever The 70 deaths in Edinburgh were equal to a rate of 11·0 per 1000 and included 1 death each from measles whooping-cough diphtheria, and diarrhœa.

Irish Towns —The 115 deaths in Dublin corresponded to an annual rate of 15·0 or 2·9 per 1000 less than that recorded in the previous week, and included 20 from infantile diarrhœa, 2 from diphtheria, and 1 from enteric fever The 91 deaths in Belfast were equal to a rate of 12 1 per 1000 and included 7 from infantile diarrhœa.

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to The Lancet *Office, directed to the Sub Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

Girl, D V L.R.C P & S Edin D P H. Lond D O Oxon has been appointed Ophthalmic Surgeon to the Eastbourne Eye Infirmary

Mitchell, T Carter M R C S L R C P Lond, Medical Officer of Health for the Wath Rural Council

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

Birkenhead Borough Hospital.—Junior House Surgeon Salary £175 per annum with board &c

Birmingham Little Bromwich Fever Hospital.—Female Assistant Medical Officer Salary £300 per annum with board &c

Birmingham (near) Romsley Hill Sanatorium —Temporary Medical Superintendent Salary £450 per annum with board &c

Brighton Royal Alexandra Hospital for Sick Children Dyke-road —House Surgeon Salary £200 per annum, with board, &c

Bristol Royal Infirmary —House Physician and House Surgeon Salary at rate of £120 per annum with board &c

Bury Infirmary —Junior House Surgeon. Salary £150 per annum with board &c.

Colmonell Parish Lower District of —Medical Officer Salary £70 per annum

Derby Derbyshire Royal Infirmary —House Physician and Casualty Officer Salary £200 per annum with board, &c

Dudley Guest Hospital.—Senior Resident Medical Officer Salary £150 per annum with board &c. Also Assistant House Surgeon Salary £120 per annum with board, &c.

Fareham Hants County Asylum.—Temporary Assistant Medical Officer Salary 7 guineas a week with board &c

General Lying in Hospital York road Lambeth —Resident Medical Officer for three months Salary £100 per annum with board

Glamorgan County Asylum Bridgend —Temporary Assistant Medical Officer Salary £6 6s per week with board &c

Hospital for Consumption and Diseases of the Chest Brompton —House Physician for six months. Salary 30 guineas.

Ipswich Auxiliary Hospital for Wounded Lattice Barn —House Physician Salary as arranged with board &c.

Leeds Public Dispensary —Resident Medical Officer Salary £200 per annum with board &c

Lindsey (Lincolnshire) County of the Parts of —Assistant Medical Officer Salary £350 per annum

London County Asylum Bexley Kent —Temporary Assistant Medical Officer Salary 6 guineas per week with board &c

London Throat Hospital, 204, Great Portland street W —House Surgeon Salary £75 per annum

Manchester Education Committee.—Female Assistant School Medical Officer unmarried Salary £300 per annum

Nottingham General Hospital.—Female House Surgeon for six months Salary at rate of £250 per annum with board &c

Nottingham and Midland Eye Infirmary —Female House Surgeon Salary £200 to £250 per annum with board, &c.

Portsmouth Royal Portsmouth Hospital.—House Surgeon for six months Salary £250 per annum with board &c.

Prince of Wales s General Hospital, Tottenham, N —Honorary Anæsthetist once a week Salary £2) per annum.

Queen s Hospital for Children Hackney road, Bethnal Green E —House Physician for six months Salary £100 per annum with board &c Also Temporary Assistant Physicians for Monday afternoons and Saturday mornings. Salary at rate of £25 per annum with lunch

Rotherham Hospital.—Junior House Surgeon. Salary £150 with board &c.

Royal Berkshire Hospital —Senior Resident Medical Officer Salary £350 per annum with board &c. Also House Surgeon for six months Salary at rate of £250 per annum with board &c. Also Second House Surgeon for six months Salary at rate of £?00 per annum if qualified (if unqualified £150) with board &c

St Helens County Borough —Temporary Assistant Medical Officer of Health Salary £350 per annum

Salisbury General Infirmary —House Surgeon Salary £150 per annum with board &c

Scottish Women s Hospitals —Female Radiographers for Units in Greece Salary £300 per annum with uniform board, &c

Sheffield Royal Infirmary —Two House Surgeons Salary £120 per annum with board &c

Southampton, Free Eye Hospital.—House Surgeon Salary £100 per annum, with board &c.

Southampton Royal South Hants and Southampton Hospital. —House Physician

South London Hospital for Women South Side Clapham Common S W —Female House *Physician and House Surgeon* for six months Salaries at rate of £100 per annum each with board &c. Also Anæsthetists for Monday and Tuesday afternoons and Tuesday and Friday mornings Salary 10s 6d per attendance

Swindon G W R Medical Fund Society —Medical Officer Salary £500 per annum

West Bromwich District Hospital.—Senior House Surgeon, unmarried Salary £160 per annum with board &c.

Westmorland Lancashire, and Cheshire Counties —Medical Practitioners to serve on Medical Boards for examination of and assessment of pensions for men discharged from the Army for Neurasthenia and Functional Nervous Disorders Salary 3 guineas per day

Births, Marriages, and Deaths.

BIRTHS

Aldis —On Sept 13th at Norton House King s avenue Clapham Park the wife of Carlyle Aldis Captain R.A.M C of a son

Goffe.—On Sept 15th at a nursing home in London, the wife (*née* Edna Mary Powell M.B, B S Lond) of E G Leopold Goffe, M.D, B S Lond of a son

Guthrie.—On Sept. 13th at Greta Heswall Cheshire *the wife of* Thomas Guthrie M.B, F R C S of Rodney street, Liverpool of a son.

Reynell.—On Sept 12th, at New Cavendish street, W to Dr and Mrs W R Reynell—a son

Richmond —On Sept. 10th at Alexandria, the wife of Captain Arthur E Richmond R A M.C of a son

Tayler —On Sept 13th at Lovemead House, Trowbridge, the wife of F E Tayler M R.C S of a son

MARRIAGES

Dale—Crossland —On Sept. 11th Captain Aston Ridley Dale M C R A.M C (S R.), to Janet (Jennie) Wemyss second daughter of the late Lewis Crossland and Mrs Crossland of Leeds

Harvie—Metford —On Sept 12th at the Parish Church Kingsdown Deal Montague Harvie R.A.M C to Dorothy Isabel only daughter of Mr and Mrs E Seymour Metford of Kingsdown

Humphry—Purvis —On Sept. 14th, by special licence, Alexander Murchison Humphry (temp Major R A.M C) to Vida, youngest daughter of Mr and Mrs David Purvis Knockdown Park Belfast

Meakin—Gascoigne.—On Sept. 15th at St. Mary s Tansor Northants, Captain Leslie Meakin R.A.M C to Honor youngest daughter of the Rev W B Gascoigne M A., rector of Tansor and Mrs Gascoigne.

Moodie—Cochrane.—On Sept. 12th at the Station Hotel Perth, Alexander Reid Moodie Captain R A.M C (T) to Emily (Queenie) younger daughter of Andrew Cochrane of Craigisla, Alyth

Radford—Lloyd —On Sept 15th at Hampstead Maitland Radford M B B S son of Mr and Mrs Ernest Radford of 32, Well Walk Hampstead N W to Muriel Ann Lloyd M.B B S D P H. second daughter of Dr and Mrs Henry Lloyd, of Arsyllis St. Asaph North Wales

DEATHS

Badcock.—On Sept 16th at Clarence House York, Arthur Badcock, *M R C S L R C P aged 55 years*

Frankling —On Sept 14th 1917 at 19 York road Harrogate Florence (*née* Ashmall) wife of Herbert Frankling Was interred at Harlow Cemetery, Wednesday Sept 19th.

N.B —A fee of 5s is charged for the insertion of Notices of Births, Marriages, and Deaths

BOOKS, ETC, RECEIVED.

Allen George, and Unwin Limited

Three Clinical Studies in Tuberculous *Predisposition* By W C Rivers, M R C.S L R C P D P H 12s 6d net.

' I Appeal Unto Cæsar By Mrs H Hobhouse With Introduction by Professor Gilbert Murray 1s net.

Baillière, Tindall, and Cox London

The Thyroid Gland in Health and Disease. By Robert McCarrison, M D R U I D Sc Belf F R C P Lond *Laureat de l Académie de Médecine Paris* Major I M S *12s 6d*

Black A and C London

An Introduction to the Physiology and Psychology of Sex By S Herbert M D M R C S L R C P *3s 6d* net.

Blackie and Son London

Health of Working Girls A Handbook for Welfare Supervisors and Others By Beatrice Webb M D Ch.B *2s 6d* net

Cassell and Co London New York Toronto, and Melbourne

Diseases of the Skin An Outline of the Principles and Practice of Dermatology By Sir Malcolm Morris K.C V O 12s net

Constable and Co Ltd London

Health in Camp By A T Nankivell M.D Captain R A.M.C 1s net

The Theory and Use of Indicators An Account of the Chemical Equilibria of Acids Alkalies and Indicators in Aqueous Solution with Applications By E B R. Prideaux, M A D Sc Lecturer in Chemistry University College *Nottingham.* 12s 6d net

Heinemann William London.

Practitioner s Pocket Pharmacology and Formulary By L. Freyberger, J P M D Vienna, M R C P Lond M.R C S Eng Barrister at Law 12s 6d net

Emergency Surgery By John W Sluss A.M M.D F A C S Associate Professor of Surgery Indiana University School. Fourth edition 17s 6d net.

Studies in Forensic Psychiatry By Bernard Glueck M D., Instructor in Psychiatry and Neurology in the Medical Departments of George Washington and Georgetown Universities. 10s. 6d net

The following journals magazines &c., have been received:— British Dental Journal of Physiology Journal of State Medicine Tropical Diseases Bulletin Journal, Medical Journal of South Africa Asylum News Archives Revue d Hygiène Homœopathic Recorder Canadian Journal of Internal Medicine Dominion Medical Monthly Office International d Hygiène Publique of Medicine and Surgery Anales al la Facultad de American Journal of Public Health Midland Medical Medicina, Universidad de Montevideo Duodecim Canadian Medical Association Journal Symons s Meteorological Magazine Journal of Nervous and Mental Diseases Medical Officer Therapeutic Gazette Indian Medical Gazette Annali d Igiène, National Medical Journal &c.

Notes, Short Comments, and Answers to Correspondents.

SACCHARIN

THE question of the harmfulness or otherwise of saccharin has recently been raised anew In THE LANCET of Nov 17th, 1888, we published a long letter from Dr C Fahlberg, who, after describing himself as the discoverer of saccharin, said that—

> If saccharin could be proved injurious to man I would ask your readers to accept my assurance that I would not be responsible for the manufacture of another ounce "

At the end of his letter he says —

> The attacks upon saccharin have sorely disquieted the public mind. If they are merited the anxiety is justified If not it will unfairly prejudice my discovery which after all will confer as much benefit upon humanity as upon myself In this spirit I ask your readers no longer to observe that silence which in most cases but not in this is both dignified and necessary It is no question of advertisement I have been grievously attacked and I plead for justice."

In the same issue of THE LANCET we published an article by Dr Thomas Stevenson and Dr L C Wooldridge, giving the results of scientific experiments made by them with saccharin Their summary is as *follows* —

> We conclude that: (1) saccharin is quite innocuous when taken in quantities largely exceeding what would be taken in any ordinary dietary (2) saccharin does not interfere with or impede the digestive processes when taken in any practicable quantity and (3) our personal experience is that saccharin may be taken *for* an extended period without interfering with the digestive and other bodily functions Hence there is no reason to think that its continued use is in any way harmful

Dr F W Pavy wrote a letter to THE LANCET of Nov 3rd, 1888, saying that—

> ' A scare has been started against saccharin upon the ground of hurtful effects having been observed to follow its employment and I have been falsely represented as participating in this assertion Under such circumstances, to remain silent would give sanction to *the statements that have been circulated.*"

This followed an annotation in THE LANCET, reporting that several paragraphs had appeared in various journals referring to the report of a commission of Paris doctors and *their adverse verdict* The conclusions of this commission were communicated to the Academy of Medicine in Paris in July, 1888 It was a communication made to the same academy by Dr Jules Worms on the subject of saccharin early in 1888 (reported in THE LANCET of May 5th, 1888) which caused the Prefect of Police of Paris to request the Council of Hygiene to give its opinion as to whether the use of this substance in alimentation would be productive of danger to the public health In England in 1888 an order was issued prohibiting its use in brewing, and from time to time in various countries it has been considered as an "adulteration" In the beginning of 1912 a United States Government Board decided against the use of saccharin because its use instead of sugar in preserved foods meant that they therefore contained less food value, saccharin lacking the nutriment of the sugar This was reported in THE LANCET of March 23rd, 1912 A few cases have been reported where saccharin apparently caused stomach pain and neuralgia and other discomforts but there is no great amount of evidence at hand as to its harmfulness when compared with the testimonials as to its benefits

A SPECIALIST IN ELECTRO THERAPY

WE have received from a correspondent a communication entitled " re A. Vernon Ward (Consolidated) Limited, enclosed within which is an application form for cumulative preference shares in a company of that name The document states that there is an insistent demand for the Vernon Ward treatment in various parts of the country and in a "brief résumé of the work already accomplished" adds that ' treatments have been administered with signal success to Royalty, members of the *Peerage* and a large number of naval and military officers and men" and also that Mr Vernon Ward enjoys the coöperation and support of the cream of the medical profession in this country " It is further stated that the goodwill of the undertaking, " created by advertising in the press to the extent of some £25,000 has made necessary the formation of the company We recommend any of our readers, including that cream of the medical profession alluded to in the circular communication, to suggest to those of their patients who may receive invitations to become shareholders in A. Vernon Ward (Consolidated) Limited, that before applying for shares and making deposits on their applications, they should take the usual course of examining the security offered and they might also ascertain who are the medical authorities whose supervision would be required to give scientific stability to any undertaking of the sort

HEARSON'S INCUBATORS

THE new list which Messrs Chas Hearson and Co, Ltd (235, Regent-street, W 1), have issued contains a large number of thermostats available for a variety of purposes, all of them regulated by means of the sensitive hollow capsule which renders possible the attainment of a temperature constant within 1° F over an indefinite period of time without adjustment Apart from this invention, the utility of which has been assured by experience in important laboratories all over the world, a new *electric incubator* is listed in which the usual water jacket is replaced by coils of electric resistance wires Naturally, with this method of heating the requisite interior temperature is rapidly reached, it is *also more economical of heat*, since it admits of a thicker layer of heat-insulating material without unduly increasing the size of the apparatus It is claimed that the same system of heating is equally applicable to drying ovens and sterilisers With a view of making the apparatus available for all countries, the list contains a preface in English, German, French Spanish, and Russian as well as a key in each language to every description of apparatus Besides thermostats, other large laboratory apparatus, such as shaking machines, centrifuges, and autoclaves, are included, and for the assistance of the novice a list of apparatus and materials suitable for the equipment of a small laboratory The list will repay careful study

ATTITUDES IN READING

THE posture of the body in writing has received for many years a large amount of attention from parents, schoolmasters, scientific observers, and medical men, but not so much attention has been paid to the posture of the body in reading In these days of many wounded men the posture of the body in reading should receive more attention The disposition of the trunk, head, and neck, and the arrangement of the limbs must have considerable influence for good or evil, particularly when the body and limbs are maintained in one position for hours at a stretch Especially is this the case when reading a book of absorbing interest, where the reader "gets lost" for a *long* time, all his attention being concentrated on what he reads Eventually he wakes up as it were from a dream in a state of rigidity and tension, to find his neck aching and his body stiff and an arm or leg all *tingling* with "pins and needles"

The attitudes of readers vary considerably Some will sit straight upright, some will lean back, and others will lean forward, propping the *forearms* across the thighs, or place the chin in the right hand and lean the elbow on the thigh If sitting on a chair some will lean forward, placing the hands behind and hanging on to the back of the chair like a *fruit bat* If sitting on an armchair some will lean for a long spell over the left arm of the chair and others over the right arm of the chair, making the ribs ache Not a few will dig their chins into their chests and curve their bodies into the form of a note of interrogation, Such an attitude maintained for a length of time is most injurious As regards the manner of holding the book, some are chin readers' and others lap readers and the book is held so that the page is at all angles The page may lie horizontally or have a dip at top or bottom or be held almost perpendicularly whilst reading the condition, of eyesight generally dictating the pose This should not be lost sight of by parents, and it is often quite useful to the practitioner to have seen his patient, especially his youthful patient reading

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital Hammersmith road W

MONDAY —2 P M. Medical and Surgical Clinics X Rays. Mr Gray Operations Mr B Harman: Diseases of the Eye. Dr Simson: Diseases of Women

TUESDAY —2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet: *Diseases of the Skin.*

WEDNESDAY —10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose, and Ear 2 P M. Medical and Surgical Clinics X Rays. Mr Pardoe: Operations

THURSDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye

FRIDAY —10 A.M Dr Simson: Gynæcological Operations 2 P.M, Medical and Surgical Clinics X Rays Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet Diseases of the Skin.

SATURDAY —10 A.M Dr Saunders: Diseases of Children Dr. Banks Davis: Operations of the Throat, Nose and Ear Mr B Harman Eye Operations 2 P.M. Medical and Surgical Clinics X Rays Mr Pardoe: Operations

THE THROAT HOSPITAL, Golden square W

MONDAY —5.15 P.M. Special Demonstration of Selected Cases.

THURSDAY —5.15 P.M, Clinical Lecture.

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot undertake to return MSS not used

Offices 423, STRAND, LONDON W C 2.

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The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied

METEOROLOGICAL READINGS

(Taken daily at 8 30 a m by Steward's Instruments)

THE LANCET Office Sept 19th 1917

Date	Rain fall.	Solar Radio in Vacuo	Maximum Temp Shade	Min Temp	Wet Bulb	Dry Bulb	Remarks
Sept. 13		86	65	51	54	57	Overcast
,, 14		110	71	55	55	60	Fine
,, 15		106	71	54	53	58	Fine
,, 16		107	71	56	58	62	Fine
,, 17		105	68	58	56	62	Fine
,, 18	0 32	96	66	60	61	62	Raining
,, 19	0 15	78	65	60	63	64	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

Communications, Letters, &c , have been received from—

A.—Mr R Ackrill Harrogate Anglo-French Drug Co Lond. Messrs Allen and Hanburys Lond Dr F S Arnold Capt. C H Attenborough, R.A.M C Capt J L Aymard R.A.M C Mr H W Abbott Lond.; Messrs Arnold and Sons Lond Capt R W Allen N Z.M C Miss L B Aldrich Blake M.D , Lond Col J G Adami A D.M S

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K —Messrs H S King and Co Lond King's College Hospital Medical School Sec. of

L.—Capt. A Lindsay R A.M.C ; Capt. G C Low I M S ; Messrs H K. Lewis and Co , Lond Dr G Louvard Lindsey (Lincolnshire) County Council, Medical Officer of Health of London Throat Hospital Sec of Lady Leishman Eastbourne; *3rd London General Hospital Gazette*, Editor of London Library

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T —Mr E W Thompson Southport Mr H. Townsend Bristol Mr J Thin, Edinburgh Messrs. Thew Hooker and Gilbey, Buckingham

U —University College, Reading Librarian of

V —Vitamogen Lond. Velox.

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Y —Lieut. Col A C Yate

Letters, each with enclosure, are also acknowledged from—

A.—Advertiser Toddington A. G

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THE LANCET, SEPTEMBER 29, 1917

Notes
ON
MALARIA
FOR OFFICERS AND MEN [1]

BY CUTHBERT CHRISTY, M B, C M EDIN,
MAJOR, R.A.M C (T)
ADVISER FOR MALARIA AND TROPICAL SANITATION GENERAL HEADQUARTERS EAST AFRICAN EXPEDITIONARY FORCE.

LARGE portions of South Africa are free from malaria, or were before the war and many South Africans know nothing of the disease Men of the Cape and Rhodesian regiments who had seen service in German South West Africa and knew only one enemy, found that in coming to East Africa they were strong men no longer but had another and unseen enemy to contend with who was stronger than the Hun

Tropical East Africa is by no means an unhealthy region as regions go in the tropics, not nearly so malarial, in fact as most parts of tropical West Africa Persons who libel the climate of East Africa forget that malaria is a preventable epidemic disease and that the greater the number of whites in any given area the greater is likely to be the prevalence of any epidemic and the quicker is it likely to spread, while the cases owing to multiple re infection become more severe To forget these facts under the conditions of military service may mean the loss of very many men

Particularly is it necessary to remember that malaria is a preventable disease Twenty years ago the cause of malarial fever or "ague" was popularly believed to be exposure to night air, gases from decaying vegetation, or breathing the misty vapours rising from marshes and swamps Since then, however, the study of tropical medicine has advanced, and the necessity for the better security of life in the tropics especially in tropical Africa, has become more urgent, with the result that malaria, the most important of all diseases affecting Europeans in hot climates, has for many years absorbed the attention of French, Italian, and English scientists to such purpose that there is now scarcely another disease the cause, prevention, and treatment of which are better understood by those who have worked at the subject

It is therefore incumbent upon every man in a malarial region, more particularly when engaged in military operations, in order to avoid the disease, or at least to understand the necessity for the precautions imposed upon him; to be conversant with the main facts in connexion with its transmission from man to man, not only for his own sake but for that of his comrades, and in this instance the welfare and greater efficiency of the East African Expeditionary Force

With this aim in view the following facts have been collected for the instruction of officers and men

General

1 Malaria is a parasitic, infectious epidemic disease conveyed from one person to another by the agency of mosquitoes

2 The microscopic parasite causing it lives and develops in the corpuscles of the blood of man and in the body of the mosquito

3 There is no evidence to show that it can exist in any other animal or possibility of its existing free in *nature*

4 When blood containing the parasite is sucked up by the mosquito from a person recovering from an attack of fever" the parasites develop and multiply in the body of the insect and after three to five days may be injected by it through the skin into the blood of other men causing after another interval of eight to ten days all the train of symptoms known as malarial fever

Explanatory

5 *The malaria parasite* —Shortly after the mosquito bite and the arrival of the parasites in the blood stream they enter and commence development within the corpuscles

6 After an interval of a few days the parasites have so multiplied in the blood of the person bitten that an attack of fever sets in the length of the interval mainly depending upon the number of bite the number of parasites injected and the temperature prevailing

7 The fever may therefore not commence until the person is many miles from where he was bitten

8 After an untreated attack has run its course the fever subsides and the microscope no longer shows active parasites within the corpuscles but there still remain in the body two forms of the parasites:—
  (a) Latent or resting forms in the liver spleen &c.
  (b) Specialised crescentic forms in the general circulation

9 (a) The latent or resting forms retire after the attack from the general circulation and remain inactive in the liver, spleen &c until perhaps the treatment is relaxed or till such time as the resisting power of the individual is lessened by chill sun exposure, exhaustion or other cause when they may return to the circulation and again become active within the corpuscles producing a relapse and a return of the patient to hospital

10 The relapse has most of the features of the primary attack with all its train of symptoms and ill effects

11 (b) The crescentic bodies are not formed until the attack has run its course

12 They remain in the general circulation beneath the skin for weeks causing no symptoms but when sucked into the stomach of certain species of mosquitoes they at once become active, and after certain changes pass from the stomach contents into the stomach wall multiply enormously and eventually invade the salivary glands of the insect from whence they are injected during the act of sucking into the blood of man as fever-causing parasites (The mosquito has the power at the moment of sucking of injecting through a special tube in its proboscis an irritating salivary secretion probably for the purpose of preventing premature coagulation of the blood)

13 Only the crescentic bodies are capable of infecting and developing in the mosquito and not the active forms of the parasite as seen in the corpuscles during the attack

14 If after some weeks the crescentic body has not found its way to the mosquito's stomach it may die or it may retire from the general circulation to the liver or spleen; where it can remain without causing symptoms for a long period But any severe constitutional disturbance such as might be caused by the removal of the individual from a warm to a cold climate may result not only in these bodies reappearing in the circulation but in their having the power to multiply and produce a crop of active fever-causing parasites and what is known as a recurrent attack, even after the lapse of two or three years

15 As in the case of the relapse the recurrent attack has most of the features of the primary attack and anyone returning say to South Africa and suffering from a recurrent attack even in a district hitherto free from malaria and years after his return may become a danger to his friends or even the nucleus of an epidemic if the right kind of mosquito happens to be an inhabitant of the neighbourhood and if mosquito net precautions are not thorough

16. *The mosquito* —Only the female mosquito has the power of sucking blood the male subsisting upon the juice of plants fruit &c

17 Not all species of mosquitoes can convey malaria The majority of the common species are harmless (except those which transmit yellow fever, elephantiasis &c)

18 The few species which are capable of conveying it belong to the class *Anophelinæ* all of which are fragile insects not easily seen comparatively silent and whose bite leaves little irritation

19 It is therefore unwise to commit oneself to the remark so frequently heard that there are no mosquitoes in a particular place or camp without the opinion of an expert

20 All mosquitoes lay their eggs upon water and the larval and pupal stages of their life are spent in the water They wriggle to the surface periodically to breathe

21 When the pupa is ready to change into the mature insect it rises to the surface the pupa-case splits down the back the mosquito emerges and after an interval for its newly formed wings to harden it flies away

22. If a thin layer of kerosene oil be spread upon the surface of the water neither larvæ nor pupæ can get their breathing tubes to the surface and all die of suffocation a never failing and ever ready method of preventing mosquitoes hatching out of receptacles which cannot easily be emptied of water

23 Where there is no water there can be no mosquitoes

24 No other insect can convey malaria Where there is malaria there must be anopheline mosquitoes

25 It does not follow that because there are anopheline mosquitoes there must be malaria The insects though present may not have been infected and therefore harmless

26. One bite is sufficient to cause an attack and one infected mosquito may give malaria to several persons in one night

27 Those species of anopheline mosquitoes which convey malaria are not usually found away from human habitations or if found are not likely to be infected Consequently men on piquet duty or in bivouac or temporary camp although severely bitten by mosquitoes often run less risk of malaria than those in camps or hospitals on lines of communication where numbers of men who have suffered from malaria are congregated and where every anopheline mosquito is likely to be infected

28 *The mosquito net* —The segregation of the individual beneath an efficient net at night is by far the most important and effective means not only of guarding against a primary attack but of preventing infection being carried from the sick person to healthy persons

29 Owing to the development of crescentic carrier bodies after and not during the continuance of the fever the use of an efficient mosquito net is far more important to the welfare of the community after than before the attack.

30 One person or even a baby with crescentic bodies in his blood sleeping without a mosquito net or with one that is defective may be and often is the nucleus of an epidemic

31 Hence arises the danger of sleeping near a native village because in a malarial locality a large percentage of the youngest children have active parasites and crescentic bodies in their blood and yet play about without showing symptoms of fever

32. Adult natives, on the other hand in a malarial locality are not usually a danger for having suffered severely in early childhood they have acquired a partial immunity, and in consequence suffer little from malaria.

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Notes
ON
MALARIA
FOR OFFICERS AND MEN [1]

BY CUTHBERT CHRISTY, M B, C M EDIN,
MAJOR, R.A.M C (T)
ADVISER FOR MALARIA AND TROPICAL SANITATION GENERAL HEADQUARTERS EAST AFRICAN EXPEDITIONARY FORCE.

LARGE portions of South Africa are free from malaria, or were before the war, and many South Africans know nothing of the disease. Men of the Cape and Rhodesian regiments who had seen service in German South West Africa, and knew only one enemy, found that in coming to East Africa they were strong men no longer but had another and unseen enemy to contend with who was stronger than the Hun

Tropical East Africa is by no means an unhealthy region as regions go in the tropics, not nearly so malarial, in fact as most parts of tropical West Africa Persons who libel the climate of East Africa forget that malaria is a preventable epidemic disease and that the greater the number of whites in any given area the greater is likely to be the prevalence of any epidemic and the quicker is it likely to spread, while the cases owing to multiple re infection become more severe To forget these facts under the conditions of military service may mean the loss of very many men

Particularly is it necessary to remember that malaria is a preventable disease Twenty years ago the cause of malarial fever or 'ague" was popularly believed to be exposure to night air, gases from decaying vegetation or breathing the misty vapours rising from marshes and swamps Since then, however, the study of tropical medicine has advanced and the necessity for the better security of life in the tropics especially in tropical Africa, has become more urgent, with the result that malaria, the most important of all diseases affecting Europeans in hot climates, has for many years absorbed the attention of French Italian and English scientists to such purpose that there is now scarcely another disease the cause prevention, and treatment of which are better understood by those who have worked at the subject

It is therefore incumbent upon *every man* in a malarial region, more particularly when engaged in military operations, *in order to avoid* the disease, or at least to understand the necessity for the precautions imposed *upon him, to be* conversant with the main facts in connexion with its transmission from man to *man not only for his* own sake but for that of his comrades and in this instance the welfare and greater efficiency of the East African Expeditionary Force

With this aim in view the following facts have been collected for the instruction of officers and men

General

1 Malaria is a parasitic, infectious epidemic disease conveyed from one person to another by the agency of mosquitoes

2 The microscopic parasite causing it lives and develops in the corpuscles of the blood of man and in the body of the mosquito

3 There is no evidence to show that it can exist in any other animal or possibility of its existing free in nature

4 When blood containing the parasite is sucked up by the mosquito from a person recovering from an attack of fever" the parasites develop and multiply in the body of the *insect* and after three to five days may be injected by it through the skin into the blood of other men causing after another interval of eight to *ten days* all the train of symptoms known as malarial fever

Explanatory

5 *The malaria parasite* —Shortly after the mosquito bite and the arrival of the parasites in *the blood* stream they enter and commence development within the corpuscles

6 After an interval of *a few days* the parasites have so multiplied in the blood of the person bitten that an attack of fever sets in the length of the interval mainly depending upon the number of bites the number of parasites injected and the temperature prevailing

7 The fever may therefore not commence until the person is many miles from where he was bitten.

8 After an untreated attack has run its course the fever *subsides* and the microscope no longer shows active parasites within the corpuscles but there still remain in the body two *forms* of the parasites —

(a) Latent or resting forms in the liver spleen &c

(b) Specialised crescentic forms in the general circulation

9 (*a*) The latent or resting forms retire after the attack from the general circulation and remain inactive in the liver spleen &c. until perhaps the treatment is relaxed or till such time as the resisting power of the individual is lessened by chill sun exposure, exhaustion or other cause when they may return to the circulation and again become active within the corpuscles producing a relapse and a return of the patient to hospital

10 The relapse has most of the features of the primary attack with all its train of symptoms and ill-effects

11 (*b*) The crescentic bodies are not formed until the attack has run its course

12. They *remain* in the general circulation beneath the skin for weeks causing no symptoms but when sucked into the stomach of certain *species of mosquitoes they at once become* active and after certain changes pass from the stomach contents into the stomach wall multiply enormously and eventually invade the salivary glands *of the* insect from whence they are injected during the act of sucking into the blood of man as fever-causing parasites (The mosquito has the power at the moment of sucking of injecting through a special tube in its proboscis an irritating salivary secretion probably for the purpose of preventing premature coagulation of the blood.)

13. Only the crescentic *bodies are capable of infecting* and developing in the mosquito and not the active forms of the parasite as seen in the corpuscles during the attack

14 If after some weeks the crescentic body has not found its way to the *mosquito's* stomach it may die or it may retire from the general circulation to the liver or spleen where it can remain without causing symptoms for a long period But any severe constitutional disturbance such as might be caused by the removal of the individual from a warm to a cold climate *may result not only* in these bodies reappearing in the circulation but in their having the power to multiply and produce a crop of active fever-causing parasites, and what is known as a recurrent attack even after the lapse of two or three years

15 As in *the case of the relapse* the recurrent attack has most of the features of the primary attack and anyone returning say to South Africa and suffering from a recurrent attack even in a district hitherto free from malaria and years after his return may become a danger to his friends or even the nucleus of an epidemic if the right kind of mosquito happens to be an inhabitant of the neighbourhood and if mosquito net precautions are not thorough

16 *The mosquito* —Only the female mosquito has the power of sucking blood the male subsisting *upon the juice of plants fruit &c*

17 Not all species of mosquitoes can convey malaria The majority of the common species are harmless (except those which transmit yellow fever elephantiasis &c.)

18 The few species which are capable of conveying it belong to the class *Anophelinæ* all of which are fragile insects not easily seen comparatively silent and whose bite leaves little irritation

19 It is therefore unwise to commit oneself to the remark so frequently heard that there are no mosquitoes in a particular place or camp without the opinion of an expert

20 All mosquitoes lay their eggs upon water and the larval and pupal stages of their life are spent in the water They *wriggle to the* surface periodically to breathe

21 When the pupa is ready to change into the mature insect it rises to the surface the pupa-case splits down the back the mosquito emerges, and after an interval for its newly formed wings to harden it flies away

22. If a thin layer of kerosene oil be spread upon the *surface* of the water neither larvæ nor pupæ can get their breathing tubes to the surface and all die of suffocation a never-failing and ever ready method of preventing mosquitoes hatching out of receptacles which cannot easily be emptied of water

23 Where there is no water there can be no mosquitoes

24 No other insect can convey malaria. *Where there is malaria there* must be anopheline mosquitoes

25 It does not follow that because there are anopheline mosquitoes there must be malaria The insects though present may not have been infected and therefore harmless

26. One bite is sufficient to cause an attack and *one* infected mosquito may give malaria to several persons in *one* night

27 *Those* species of anopheline mosquitoes which convey malaria are not usually found *away from* human habitations or if found are not likely to be infected Consequently men on piquet duty or in bivouac or temporary camp although severely bitten by mosquitoes often run less risk of malaria than those in camps or *hospitals* on lines of communication, where numbers of *men* who have suffered from malaria are congregated and where every anopheline mosquito is likely to be infected

28 *The mosquito net* —The segregation of the individual beneath an efficient net at night is by far the most important *and effective* means not only of guarding against a primary attack but of preventing infection being carried from the sick person to healthy persons

29 *Owing* to the development of crescentic carrier bodies after and not during the continuance of the *fever the use of* an efficient mosquito net is far more important to the welfare of the community after than before the attack.

30 One person or even a baby with crescentic bodies in his blood sleeping without a mosquito net or with one that is defective may be and often is the nucleus of an epidemic

31 Hence arises the danger of sleeping near a native village because in a malarial locality a large percentage of the youngest children have active parasites and crescentic bodies in their blood and yet play about without showing symptoms of fever

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F —Messrs Fannin and Co Dublin; Dr A. F Farnley Potters Bar

G —Mr E H Godbold, Lond. Capt. *N F Graham R.A.M.C* Dr S Gill *Formby* G M J Mr T Green New Brighton Surg P C Gibson R N

H —Dr L H Hay Redruth G H Hardie, Okehampton Holborn Advertising Service Lond. *Dr W B Haddad Cairo*; Mr T L. Hall, Dilwyn Dr C E Harvey Sav la Mar Drs. Hingston and Morgan, Liskeard

J —Dr I Jefferiss Gillingham; Jessop Hospital for Women Sheffield Sec of

K.—Kensington Dispensary, Lond Sec. of

L.—Mr *H D* Lauchlan Lond.; Fleet-Surg L. Ley R N L. R. Lloyds Bank, Lond., Manager of; Locum Torrington

M.—Lieut. *Col* MacLoughlin Messrs. Macmillan and Co, Lond. Dr C J Macauley Dublin; Lieut. H Morley R.A.M C Messrs. J Menzies and Co Glasgow Mr A. R MacGregor, Burton Bradstock Messrs. Mackinlay and Co Glasgow, Matlock Sanatorium Medical Supt. of M. M

N —National Anti Vaccination League, Lond., Sec. of, *Nottingham* and Midland Eye Infirmary, Sec. of

P —Mr F G Pulman Lond. Capt. A. M Pryce, R A.M.C Mr *G Phillips* Johannesburg

R —Mrs Roydhouse, Brighton Capt. W H. R *Rivers*, R.A.M C; Reuters, Ltd Lond. Sec. of Dr M Radford Carshalton R L B S

S —Dr S Smith, Cairo; S W Lieut. V E Sorapure, R.A.M C Dr G I Strachan Cardiff Mrs Sandison Croydon Mrs Shegog Liverpool

T —Mr *L* Thain Ewyas Harold Mrs. Tayler, Bexhill

V —Victoria Hospital for Sick Children, Hull, Sec of

W —Mr T F Wyse Margate Major W I de C Wheeler R.A.M C Mrs Gould Williams Lond.; Mrs. Ward Blackrock Warwickshire and Coventry Joint Committee for Tuberculosis Warwick Treas to the; Dr S A. K. Wilson, Lond.; Mr A. Wilson Lond.

Notes

ON

MALARIA

FOR OFFICERS AND MEN [1]

BY CUTHBERT CHRISTY, M B, C M EDIN,

MAJOR, R.A.M C (T)

ADVISER FOR MALARIA AND TROPICAL SANITATION GENERAL HEADQUARTERS EAST AFRICAN EXPEDITIONARY FORCE

LARGE portions of South Africa are free from malaria, or were before the war, and many South Africans know nothing of the disease Men of the Cape and Rhodesian regiments who had seen service in German South West Africa, and knew only one enemy, found that in coming to East Africa they were strong men no longer but had another and unseen enemy to contend with who was stronger than the Hun

Tropical East Africa is by no means an unhealthy region as regions go in the tropics, not nearly so malarial, in fact as most parts of tropical West Africa Persons who libel the climate of East Africa forget that malaria is a preventable epidemic disease, and that the greater the number of whites in any given area the greater is likely to be the prevalence of any epidemic and the quicker is it likely to spread, while the cases owing to multiple re infection become more severe To forget these facts under the conditions of military service may mean the loss of very many men

Particularly is it necessary to remember that malaria is a preventable disease Twenty years ago the cause of malarial fever or "ague" was popularly believed to be exposure to night air, gases from decaying vegetation, or breathing the misty vapours rising from marshes and swamps Since then, however, the study of tropical medicine has advanced, and the necessity for the better security of life in the tropics especially in tropical Africa, has become more urgent, with the result that malaria, the most important of all diseases affecting Europeans in hot climates, has for many years absorbed the attention of French, Italian and English scientists to such purpose that there is now scarcely another disease the cause, prevention, and treatment of which are better understood by those who have worked at the subject

It is therefore incumbent upon every man in a malarial region, more particularly when engaged in military operations, in order to avoid the disease, or at least to understand the necessity for the precautions imposed upon him; to be conversant with the main facts in connexion with its transmission from man to man not only for his own sake but for that of his comrades and in this instance the welfare and greater efficiency of the East African Expeditionary Force

With this aim in view the following facts have been collected for the instruction of officers and men

General

1 Malaria is a parasitic, infectious epidemic disease conveyed from one person to another by the agency of mosquitoes

2 The microscopic parasite causing it lives and develops in the corpuscles of the blood of man, and in the body of the mosquito

3 There is no evidence to show that it can exist in any other animal or possibility of its existing free in nature

4 When blood containing the parasite is sucked up by the mosquito from a person recovering from an attack of fever the parasites develop and multiply in the body of the insect and after three to five days may be injected by it through the skin into the blood of other men, causing after another interval of eight to ten days all the train of symptoms known as malarial fever

Explanatory

5 *The malaria parasite* —Shortly after the mosquito bite and the arrival of the parasites in the blood stream they enter and commence development within the corpuscles

6 After an interval of a few days the parasites have so multiplied in the blood of the person bitten that an attack of fever sets in the length of the interval mainly depending upon the number of bites the number of parasites injected and the temperature prevailing

7 The fever may therefore not commence until the person is many miles from where he was bitten

8 After an untreated attack has run its course the fever subsides and the microscope no longer shows active parasites within the corpuscles but there still remain in the body two forms of the parasites:—

(a) Latent or resting forms in the liver spleen &c

(b) Specialised crescentic forms in the general circulation

9 (a) The latent or resting forms retire after the attack from the general circulation and remain inactive in the liver spleen &c until perhaps the treatment is relaxed or till such time as the resisting power of the individual is lessened by chill sun exposure, exhaustion or other cause when they may return to the circulation and again become active within the corpuscles producing a relapse and a return of the patient to hospital

10 The relapse has most of the features of the primary attack with all its train of symptoms and ill effects

11 (b) The crescentic bodies are not formed until the attack has run its course

12 They remain in the general circulation beneath the skin for weeks causing no symptoms but when sucked into the stomach of certain species of mosquitoes they at once become active and after certain changes pass from the stomach contents into the stomach wall multiply enormously and eventually invade the salivary glands of the insect from whence they are injected during the act of sucking into the blood of man as fever-causing parasites (The mosquito has the power at the moment of sucking of injecting through a special tube in its proboscis an irritating salivary secretion probably for the purpose of preventing premature coagulation of the blood)

13 Only the crescentic bodies are capable of infecting and developing in the mosquito and not the active forms of the parasite as seen in the corpuscles during the attack

14 If after some weeks the crescentic body has not found its way to the mosquito s stomach it may die or it may retire from the general circulation to the liver or spleen, where it can remain without causing symptoms for a long period But any severe constitutional disturbance such as might be caused by the removal of the individual from a warm to a cold climate may result not only in these bodies reappearing in the circulation but in their having the power to multiply and produce a crop of active fever-causing parasites and what is known as a recurrent attack, even after the lapse of two or three years

15 As in the case of the relapse the recurrent attack has most of the features of the primary attack and anyone returning say to South Africa and suffering from a recurrent attack even in a district hitherto free from malaria and years after his return may become a danger to his friends or even the nucleus of an epidemic if the right kind of mosquito happens to be an inhabitant of the neighbourhood and if mosquito net precautions are not thorough

16 *The mosquito* —Only the female mosquito has the power of sucking blood the male subsisting upon the juice of plants fruit &c

17 Not all species of mosquitoes can convey malaria The majority of the common species are harmless (except those which transmit yellow fever elephantiasis &c)

18 The few species which are capable of conveying it belong to the class *Anophelinæ* all of which are fragile insects not easily seen, comparatively silent and whose bite leaves little irritation

19 It is therefore unwise to commit oneself to the remark so frequently heard that there are no mosquitoes in a particular place or camp without the opinion of an expert

20 All mosquitoes lay their eggs upon water and the larval and pupal stages of their life are spent in the water They wriggle to the surface periodically to breathe

21 When the pupa is ready to change into the mature insect it rises to the surface the pupa-case splits down the back the mosquito emerges and after an interval for its newly formed wings to harden it flies away

22. If a thin layer of kerosene oil be spread upon the surface of the water neither larvæ nor pupæ can get their breathing tubes to the surface and all die of suffocation a never failing and ever ready method of preventing mosquitoes hatching out of receptacles which cannot easily be emptied of water

23 Where there is no water there can be no mosquitoes

24 No other insect can convey malaria Where there is malaria there must be anopheline mosquitoes

25 It does not follow that because there are anopheline mosquitoes there must be malaria The insects though present may not have been infected and therefore harmless

26 One bite is sufficient to cause an attack and one infected mosquito may give malaria to several persons in one night

27 Those species of anopheline mosquitoes which convey malaria are not usually found away from human habitations or if found are not likely to be infected Consequently men on piquet duty or in bivouac or temporary camp although severely bitten by mosquitoes often run less risk of malaria than those in camps or hospitals on lines of communication where numbers of men who have suffered from malaria are congregated and where every anopheline mosquito is likely to be infected

28 *The mosquito net* —The segregation of the individual beneath an efficient net at night is by far the most important and effective means not only of guarding against a primary attack but of preventing infection being carried from the sick person to healthy persons

29 Owing to the development of crescentic carrier bodies after and not during the continuance of the fever the use of an efficient mosquito net is far more important to the welfare of the community after than before the attack.

30 One person or even a baby with crescentic bodies in his blood sleeping without a mosquito net or with one that is defective may be and often is the nucleus of an epidemic

31 Hence arises the danger of sleeping near a native village because in a malarial locality a large percentage of the youngest children have active parasites and crescentic bodies in their blood and yet play about without showing symptoms of fever

32 Adult natives on the other hand in a malarial locality are not usually a danger for having suffered severely in early childhood they have acquired a partial immunity and in consequence suffer little from malaria.

33 Strangers however from upland regions where there is no malaria not having suffered from the disease in childhood, have acquired no immunity and are soon likely to be infected on reaching a malarial district at a lower level

34 Indians rarely seem to acquire any immunity and are very susceptible to malaria. Their proximity is a danger to European.

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[1] These notes amount to an amplified syllabus of lectures delivered in the field to troops in East Africa Major Christy s practice was to lecture for half an hour and to answer questions for another half hour He obtained very encouraging results

35 A mosquito net to be effective should be large enough to prevent the arms and knees being bitten through it and also to allow of its being tucked in all round

36 An efficient mosquito net properly used is a protection in tropical Africa against attacks from many harmful insects and animals besides mosquitoes For example: Flies which lay their eggs in the skin or in the nose at night, the maggots hatched from which sometimes cause irreparable injury or even death scorpions several species of dangerous centipedes poisonous ants beetles of many sorts which injure by biting ejecting poisons or by entering the ears ticks whose bite conveys serious fever snakes lizards rats &c and by means of its calico top from dust and dirt dropped from above in hut or tent or from heavy dew when sleeping in the open.

37 The lightest and smallest net which can be made serviceable under all circumstances whether in hospital clearing station camp or bivouac is one with calico top 5 feet 6 inches long by 2 feet broad and with sides 3 feet deep (2 feet of netting and 1 foot of calico tuck in) At each four top corners are double tapes, 8 inches long for fixing the net to its supports

38 The latest approved ordnance pattern is a rectangular net of the above dimensions To be effective it must be suspended by means of its corner tapes inside its supporting sticks otherwise it cannot be tucked in On no account should it be placed over its supports nor allowed to sag or hang loose

39 For military purposes the mosquito net should of course be khaki or any other less conspicuous colour than white but khaki netting being unobtainable it is advisable for each man for his own safety to dye his net with Condy's fluid coffee or other colouring agent

40 There are other methods of individual segregation than by the mosquito net The best of these is by the use of "Bamber oil" a mosquito lotion used extensively by coolies on the plantations in Ceylon &c

Its composition is as follows —

Citronella oil (not lemon grass oil) ..	1½ parts
Kerosene (paraffin) oil	1 part
Coconut oil	2 parts

To which is added carbolic acid 1 per cent Its efficacy lasts from four to six hours sufficient to give a night's sleep in comparative safety when a mosquito net is not available or cannot be used

41 *Quinine* —Quinine is the only drug in the world we know of which will kill the malaria parasite and consequently quinine is the only drug of any use as a prophylactic against malaria—that is for the prevention of primary attacks - and it is the only medicine which will cure the disease

42 Quinine being absorbed into the blood kills the parasite freshly injected by the mosquito but when after three or four hours these have entered the corpuscles quinine has less effect upon them

43 Quinine should therefore be taken early after any risk has been incurred but as the exact time of the risk can rarely be determined the best way to accomplish this is to take it frequently

44 A daily dose of grains 5 after the evening meal is for many reasons the wisest procedure

45 A grains 5 dose taken at 10 P M will kill any parasites which may have been injected by mosquitoes during the evening and will remain in the blood long enough to put out of action any that may be introduced up to 6 A M next morning The hours of daylight need not of course, be provided for

46 If quinine is taken only on Saturdays and Sundays a person may be bitten by infected mosquitoes on the Monday and the parasites injected may have so multiplied in the body by the time Saturday comes round again that an attack of fever is unavoidable

47 Quinine alone will not reduce the chances of infection more than perhaps 25 or 30 per cent but quinine plus the intelligent use of an efficient mosquito net should reduce those chances by at least 90 per cent.

48 Quinine is the only specific for malaria It cuts short the attack by killing the young parasites as each successive crop develops in the blood

49 If taken in sufficient quantities during the attack it will prevent the formation of the crescentic bodies, which once formed constitute the convalescing patient a danger to his fellows, and in spite of quinine may remain in the body for a long period

50 A slight attack is just as dangerous in this respect as a severe one and a person refusing to go sick "for a little fever" and neglecting to take quinine deserves to be severely dealt with

51 If continued after the attack in sufficient doses daily it will account for all the resting latent forms of the parasite in the spleen &c, prevent relapses and bring about a permanent cure but the mosquito net protection must be efficient and fresh attacks from bites of infected mosquitoes not allowed to supervene

52. A good method of quinine after treatment—that is, from the date of the subsidence of the fever—is as follows —

At least 20 grains daily for 2 weeks
15 , 2 ,
5 , 2 months

53 With the quinine may be combined if necessary, iron and arsenic tonics as ordered by the medical officer

54 Opinions regarding the after treatment by quinine frequently differ as to when and how the drug should be taken but the main point to realise is that the dosage should be daily for three months and the daily dose sufficiently large during the first month of the three If a relapse should occur the three months treatment must be commenced afresh.

55 Neglect of quinine after the attack will certainly result in a relapse which may mean the development of additional resting forms and crescentic bodies as well as the further decrease of the resisting power of the body tending to other relapses and general debility

56 The deafness and other slight effects of taking quinine are not permanent However unpleasant the effects may be they are infinitely preferable to the risk of permanent inefficiency or loss of life.

57 Although the taking of quinine has in some cases resulted in the passing of black water unaccompanied by any fever, quinine is certainly not the cause of blackwater fever

58 Although we may not know precisely what is the cause of this disease there is plenty of evidence to show that malaria is the initial factor To prevent malaria by the careful use of a net or to bring about a permanent cure by energetic after treatment with quinine, is the only way of avoiding risk of blackwater fever

In THE LANCET there have been published recently the notes of cases of malaria occurring in England, and in one district these cases have been quite numerous, so that notification has been enjoined There is no statement in the above notes, which were written originally for the troops in East Africa, which does not apply equally to any condition arising in the home country, but it should be remembered that atmospheric temperature is an important factor in the propagation of malaria In a temperate climate not only is the parasite in man retarded in its development in the blood, but its development in the mosquito is also delayed Moreover, the mosquito itself is disinclined to suck blood till the temperature rises to what in England is looked upon as tropical heat We are familiar with the reports in the lay press of the widely spread occurrence of mosquitoes whenever there is an unusually high summer temperature These reports are written in ignorance of the fact that the gnat is always with us, but only bites in what is regarded in this country as very hot weather A simple form of malaria was very common at one time in the eastern counties, and might become so again, though the severe malaria of the tropics is not likely to be prevalent.

NOTES ON THE

TREATMENT OF SUBTERTIAN CEREBRAL MALARIA WITH QUININE AND GALYL

BY A. W FALCONER, M D, CH B ABERD, M R C P LOND,
MAJOR, R A.M C (T)
AND
A. G ANDERSON,
CAPTAIN R.A M C

SALVARSAN and neosalvarsan have been used to a considerable extent during the last six or seven years in the treatment of malaria Most observers are agreed that these drugs, especially when associated with quinine, are of value in infections with the benign tertian and quartan parasites, but are of little value against infections with the *Plasmodium laverani* Although quinine alone may justly be termed a specific in the treatment of most types of malaria the death rate from malignant subtertian malaria is yet sufficiently high to stimulate further effort to find an even more efficient therapy

Cases Treated with Quinine and Galyl Combined

The following six cases were treated with a combination of quinine and galyl

CASE 1 —Private C, aged 31 was admitted to base hospital on Sept 22nd 1916 He had reported sick on Sept 18th complaining of headache vomiting and "the shivers" He stated that for the previous three months he had been having attacks of shivering and sweating at irregular intervals On admission to hospital his general condition was good his temperature was normal and his spleen extended half an inch below the costal margin. He was treated with 20 grains of quinine sulphate three times a day by the mouth He felt quite well and his temperature remained normal until the morning of Sept 25th. On that date his temperature rose to 100° F and remained up all day

On the morning of the 26th the temperature had fallen to normal, but rose again in the evening to 101° and the patient felt sick and vomited An injection of 20 grains of quinine bihydrochloride was administered intramuscularly

On the morning of the 27th another injection of 20 grains of quinine was given intramuscularly His temperature was normal and did not rise above normal throughout the day At noon the patient refused his food, and looked strange at 3 P M. he was found to have complete paralysis of the muscles of both sides of the tongue of the pterygoids, and of the masseters There also appeared to be some weakness of the external recti There was no paralysis of the limbs or alteration of the superficial or deep reflexes The patient was quite conscious and could carry out directions as to the movements of his limbs the fundi oculorum were normal. A blood film showed the presence of numerous subtertian rings and crescents He was given an intravenous injection of 0·8 gm of quinine bihydrochloride. At 8 P M the patient's condition was unchanged except that he now appeared to have some difficulty in understanding what was said to him. There was a definite internal strabismus of the left eye a further 0 8 gm of quinine was administered intravenously

On the morning of the 28th the condition of the patient was much improved. He could open his mouth protrude his tongue and articulate slowly He had some difficulty in swallowing as fluids tended to regurgitate through the nose There was still defective movement of both eyes outwards In the afternoon his temperature rose to 100° On this date he was given two intravenous injections of quinine bihydrochloride, 0 8 gm each.

On the morning of the 29th his condition was much worse There was complete paralysis of the tongue the palate and the muscles of mastication There was also complete ophthalmoplegia, and it was doubtful whether the patient understood what was said to him. At 9 A.M he received a further 0 8 gm of quinine bihydrochloride intravenously At 11 A.M as there was no improvement in his condition he was given 0·3 gm. of galyl intravenously At 3 P.M the patient was much improved. He could then protrude his tongue move his jaw talk slowly but quite intelligently swallow slowly and move his eyes At 9 P.M. he was given a further 0·8 gm of quinine intravenously

On the 30th the patient's condition had continued to improve There was still some dysarthria but he was able to swallow without difficulty He was put on 20 grains of quinine sulphate three times a day by mouth The improvement steadily continued but on Oct 1st, as the temperature still rose to 100° he was given 0·2 gm of galyl intravenously The temperature fell that night and remained subnormal during the rest of his stay in hospital He showed no further symptoms and was transferred to hospital ship on Oct. 16th when there was no evidence of organic nervous disease and no malarial parasites could be found in the blood.

CASE 2.—Sapper R., aged 33 was admitted to base hospital on Oct 4th 1916 On admission the patient's general condition was bad and the temperature was 103° F He showed no evidence of any local lesion of the nervous system A blood film showed the presence of numerous subtertian malarial parasites He was given 0 8 gm of quinine bihydrochloride intravenously On the morning of the 5th his temperature was subnormal but his general condition was very poor He was again given 0·8 gm. of quinine intravenously, and at 2 P M 20 grains of quinine sulphate by the mouth. In the afternoon the patient developed marked dysarthria and difficulty in swallowing The speech was quite unintelligible. The movements of the tongue and palate were present but much impaired. The patient's mental condition was not affected and there was no paralysis of the limbs or alteration in the superficial or deep reflexes. At 6 P.M he received 0 4 gm. of galyl intravenously On the 6th the patient's general condition was much improved, and beyond slight dysarthria, which rapidly passed off he showed no evidence of local disease of the nervous system. He was then treated with quinine intramuscularly and later by the mouth, and rapidly became convalescent He was transferred to hospital ship on Oct 21st without any evidence of organic nervous disease

CASE 3.—Private B aged 48, was admitted to base hospital on the night of Oct 7th complaining of headache and general weakness. On admission his temperature was 103° F., but fell to 99° on the morning of Oct. 8th. His general condition was fair and his spleen extended about one inch below the costal margin He was treated with 20 grains of quinine sulphate three times a day by the mouth. He took his dinner at noon on the 8th without discomfort, but at 4 P.M. it was found that he was unable to swallow his tea, and he rapidly became unconscious. A blood film showed the presence of numerous subtertian rings and crescents. When seen at 5 P.M he was lying in a semi-conscious condition and did not pay any attention to what was said to him. The conjunctival reflex was present and the superficial and deep reflexes were normal The unconsciousness rapidly deepened and he could not be roused by any stimulation He received 0 8 gm of quinine bihydrochloride at 5 P.M 7 P.M and 10 P M At 11 P M his condition was unchanged except that his pulse was falling He then received 0 4 gm of galyl intravenously When seen at 6 A M next morning he was quite conscious able to answer questions slowly and intelligently and swallow His temperature was subnormal and remained so for the remainder of his stay in hospital A blood film showed the presence of scanty subtertian crescents up to Oct 15th but he showed no further symptoms and was transferred to hospital ship on the 22nd

CASE 4.—Private C aged 25 was admitted to the base hospital on Oct 10th On admission the patient's general condition was poor his temperature was 99° F., and his spleen extended about one inch below the costal margin A blood film showed the presence of rings and crescents He tended to be drowsy but answered questions quite intelligently and had no complaints He was given 0·8 gm. of quinine bihydrochloride intravenously On the morning of the 11th the patient's general condition was worse, he was more drowsy and answered questions with difficulty The pulse was 120 per minute and feeble He received 15 grains of quinine bihydrochloride intramuscularly At 3 30 P.M his condition suddenly became much worse his breathing became stertorous and his pulse imperceptible he lay moaning incessantly and rolling his head from side to side. There was no paralysis and his superficial and deep reflexes were normal His temperature was subnormal. At 4 P M he became violent and lay on his left side in the typical attitude of cerebral irritation He violently resisted any interference with this position. He received 0 4 gm of galyl intravenously At 9 P.M his condition had definitely improved He had slept for two hours and his pulse was better At 1 A M on the 12th he again became rather excited and was given 1/150 grain of hyoscine After this he slept and when he awoke was rational though weak From this date he rapidly and steadily improved and on the 22nd was transferred to hospital ship without presenting any further local symptoms

CASE 5.—Private L. aged 20 was admitted to the base hospital on Oct 15th 1916 with a diagnosis of malaria. On admission his temperature was normal, and he presented no local symptoms His spleen extended half an inch below the costal margin He had never suffered from fits nor had any of his family done so On Oct 16th whilst in the latrine he suddenly developed an epileptiform fit After having been brought back to the ward he was in a very confused condition and paid no attention to any questions but constantly attempted to get out of bed The blood film did not show any malarial parasites His temperature had risen to 101 [illegible]° F During the 16th he continued to have epileptiform fits and in the 24 hours had some 12 in all. The clonic convulsions were general and did not appear to begin constantly in any particular part but they were always associated with marked deviation of the head and eyes to the left Between the fits he was either extremely drowsy or violently delirious At 2 P M he received 0·8 gm of quinine bihydrochloride intravenously and at 6 P.M. 20 grains intramuscularly

On the morning of the 17th his temperature was 101° and his pulse-rate 80 per minute He was very drowsy and had passed no urine He received 20 grains of quinine intramuscularly At 9 P.M he developed another fit, and it was noted that the left plantar reflex was extensor the right plantar reflex was flexor He was given 0 4 gm of galyl intravenously and a lumbar puncture was performed The cerebro-spinal fluid appeared to be under increased pressure and two test tubefuls of clear fluid were drawn off The cerebro-spinal fluid showed no increase in cellular elements At 8 P.M as he had passed no urine for 38 hours a catheter was passed and less than an ounce of urine was obtained It did not contain any albumin sugar or casts

On the morning of the 18th the temperature was normal and the patient's general condition improved He answered questions quite readily and was taking his nourishment well The left plantar reflex was still extensor and there were marked nystagmoid jerkings of the eyes on lateral movement to either side. The left leg was distinctly weaker than the right but was capable of performing all movements with a fair amount of force and there did not appear to be any ataxia of the limbs Urine was being passed quite freely He was given two doses of 20 grains of quinine intramuscularly on this date.

From this date onwards he was treated with quinine at first intramuscularly and later on by the mouth. Convalescence was uninterrupted The weakness of the left leg rapidly improved, but the plantar reflex remained extensor for four weeks. The nystagmoid jerkings of the eyes varied somewhat from time to time but were still definitely present six weeks after the patient's admission to hospital When able to get up he showed a pronounced reeling gait and unless supported he tended to fall to the left He stated that he felt as if his head were being pulled to the left When made to walk holding his head down to his right shoulder with his right hand the tendency to reel to the left was diminished but was still present. There was no Rombergism and no ataxia The optic discs were normal He had no further fits after the 18th and was transferred to hospital ship in February 1917

CASE 6.—Dr S aged 22, was admitted to hospital on Sept. 29th 1916. He reported sick on the 21st, complaining of pain in the head and back, and diarrhoea On admission to hospital his general condition was fair his temperature 103° F his pulse 120 per minute and his spleen two inches below the costal margin He was put on 40 grains of quinine sulphate by the mouth per day On Oct. 2nd as the temperature was still raised he was given 20 grains of quinine bihydrochloride intramuscularly in addition On the 4th his temperature did not rise above 99° and he appeared somewhat better On the 5th the temperature again rose to 101 4° and he complained of some pain in the neck and a little difficulty in swallowing No definite affection of the cranial nerves could be made out but the right plantar reflex was definitely extensor He was again put on quinine intramuscularly On the 6th the temperature again rose he still complained of pain in the neck and the right plantar reflex was still extensor The respirations had increased in frequency and there was some dullness at the base of the right lung posteriorly He was given two doses of 0·8 gm. of quinine intravenously On the 7th as there was no improvement, he was given 0·4 gm of galyl intravenously He died on the morning of the 8th

Post mortem the whole of the upper and lower lobes of the right lung were solid in a condition of grey hepatisation There was a considerable accumulation of cerebro-spinal fluid below the tentorium and some œdema of the pia arachnoid over the pons and medulla. The brain was hardened in formalin and then sectioned but it did not show any macroscopic change

Effects of Galyl Alone

In these six cases galyl was used in association with large doses of quinine. So far we have been able to make only a limited number of observations of the effect of galyl alone on the subtertian parasites in the peripheral blood stream, but that galyl alone can cause the disappearance of the ring forms of parasite from the peripheral blood stream is shown by the two following cases

CASE 7.—Sister S aged 28, was admitted to hospital on Nov 12th 1916 with pyrexia. Numerous subtertian rings were present in the blood The patient was put on 20 grains of quinine sulphate three times a day by the mouth This produced constant vomiting headache and very troublesome tinnitus aurium The parasites persisted in the blood stream and the pyrexia continued On Nov 14th she was put on intramuscular injections of quinine bihydrochloride, 20 grains twice a day The intramuscular injections were continued for four days but the patient was extremely intolerant of quinine and complained of violent headache and tinnitus aurium with occasional vomiting The temperature was swinging between 97° and 101° F Subtertian rings were constantly present in considerable numbers in the blood She was again put on quinine by the mouth but on account of vomiting it was impossible to get her to take it regularly

An intermittent pyrexia continued up to Nov 27th and during this period subtertian rings were constantly present in the blood On Nov 27th she received 0·2 gm of galyl intravenously Her general condition definitely improved but the blood still showed subtertian rings although in diminished numbers up to Dec 6th when she had a second dose of 0 4 gm of galyl From this date onwards there was a marked general improvement in her condition although she still continued to show an irregular pyrexia rising to 100° at night her blood was examined every few days for malarial parasites until her discharge some two months later but these were not again found On Dec. 10th typhoid bacilli were isolated from the stools and on Jan 2nd 1917 she developed a periostitis of the right humerus

CASE 8.—Private B aged 26, elsewhere reported in detail was admitted to hospital on the night of Oct 4th 1916 On Oct 5th his temperature rose to 102° F., his general condition was poor his sclerotics icteric, and he presented gangrene of the toes of both feet. A blood film showed the presence of rings and crescents, anisocytosis poikilocytosis, and polychromatophilia As it was considered possible that a vascular spasm aggravated by quinine might play a part in the condition of the feet he was not put on quinine but given 0·3 gm of galyl intravenously His temperature fell that night and remained subnormal throughout the rest of his stay in hospital His general condition rapidly improved and a blood film taken on the 10th was reported negative to malarial parasites Two other blood films taken later were also reported negative Before his discharge to hospital ship he was put on 10 grains of quinine sulphate twice a day by the mouth.

Persistence of Crescents under Combined Treatment

In this case it will be noted that the crescents also disappeared rapidly from the blood, but in most of our cases of combined quinine and galyl treatment the crescents have been much more persistent, as in the following case

CASE 9 —*Private K* aged 23 was admitted to hospital on Dec 23rd, 1916 with a diagnosis of bronchitis The patient had been in hospital in May 1916 with a diagnosis of P U O and in October with malaria He had not felt well since leaving hospital in October and he stated that he had had frequent shivering fits since then. During September and October he had taken 30 grains quinine by the mouth per day but had only been taking it irregularly in November and December

On admission the patient s general condition was poor His temperature was 102° F and rose to 103° next day, to fall to normal on the 25th His blood showed numerous subtertian crescents and rings From Dec 24th to 27th the number of crescents met with in counting 200 leucocytes was practically constant, the figures being 100 crescents to 200 leucocytes On the 27th he was given 0 4 gm of galyl intravenously On the 29th the crescents had fallen to 50 on the 30th to 36 for every 200 leucocytes On the 30th he again received 0 4 gm of galyl On Dec. 2nd the crescents had fallen to 24 in 200 leucocytes on the 3rd to 14 and on the 4th to 7 crescents for every 200 leucocytes

On the evening of Jan 11th the patient developed catarrhal symptoms with a temperature of 101° but without any rigor A similar condition was at that time present in the ward and was almost certainly not malarial The temperature was normal on the 6th and on the 6th and 7th the crescents numbered respectively 11 and 10 to 200 leucocytes He received another 0 4 gm of galyl on the 7th On the 8th his temperature rose again and he had a malarial attack Rings were found in the blood on the 9th His temperature became normal again on the 11th and his blood showed no rings but 23 crescents to 200 leucocytes He was put on 40 grains of quinine bihydrochloride intramuscularly once a day and 20 grains of quinine sulphate twice a day by the mouth On the 13th 14th and 15th his blood showed 8 7 and 8 crescents respectively to 200 leucocytes On the 23rd and 24th 1 crescent to 200 leucocytes was found and on the 25th and 26th no crescents could be found in counting 300 leucocytes

On Feb 1st 1 crescent was found in counting 200 leucocytes on the 2nd, 3 crescents to 200 leucocytes On the 4th and 6th no crescents were found in counting 400 and 300 leucocytes respectively His general condition was now excellent and he was transferred to hospital ship on Feb 7th

Remarks

With regard to the value of combining galyl with quinine in serious cases of malaria our experience is yet too limited to permit of any dogmatic statements as to its efficacy It will be noted that in the first six cases reported here all were seriously ill with definite subtertian cerebral malaria All the cases recovered, with the exception of one who died of a complicating croupous pneumonia All had received quinine, several of them large doses by the mouth, intramuscularly, and intravenously, without clinical improvement In all of them, with the exception of the fatal case, the clinical improvement after the administration of galyl was striking and immediate In none of the cases did the injection produce any unpleasant results, although several of the cases appeared almost moribund before the injection

In Case 8, in which it was considered inadvisable to give quinine, galyl alone caused the disappearance of the parasite from the peripheral blood and produced a striking improvement in the condition of the patient

In Case 7 the patient took quinine in any form with great difficulty, and although she had taken a considerable amount of quinine by the mouth and intramuscularly ring forms of the subtertian parasite were constantly present in the blood After the first half dose of galyl there was a notable clinical improvement, but the parasite could still be demonstrated in the blood After the second dose the parasites at once disappeared from the blood The typhoid ran a protracted course, and she developed a periostitis of the left humerus, but in spite of repeated examinations parasites were not again demonstrated in the blood during the rest of her stay in hospital

In Case 9 subtertian crescents were present in large numbers Under treatment by galyl alone they diminished from 100 per 200 leucocytes to 7 or 8 The patient's general condition very greatly improved, but he still developed a malarial attack with the presence of rings in the blood These rings disappeared under treatment by intramuscular quinine and the crescents continued to diminish and were absent on Feb 7th, when he was transferred to hospital ship

We consider that we are justified in concluding 1 That the treatment in itself is free from danger 2 That in subtertian malaria which is resisting adequate quinine treatment, or where the condition is sufficiently alarming, the results of the combined galyl and quinine treatment have been encouraging enough to justify a further trial It must be thoroughly understood, however, that the addition of galyl in no way diminishes the necessity for quinine 3 That in cases where, on account of idiosyncrasy, quinine is impossible a valuable substitute may be found in galyl

We take this opportunity of thanking Colonel Purves Stewart, C B , A M S , consulting physician to the Salonika Force, for his valuable assistance and advice which were always at our disposal To Lieutenant-Colonel P Mitchell R A M C (T F), we are also indebted for permission to use the hospital records, and to Captain R Richards R A M C (T F), for the hæmatological and post-mortem reports

SURGERY NEXT DOOR TO THE FRONT

BY T B LAYTON, M S LOND , F R C S ENG ,

LIEUTENANT COLONEL, R.A.M C (T)

IN his first Lettsomian lecture[1] Colonel Cuthbert Wallace sums up war surgery as being "in a great degree a matter of when and where to operate, and how best to move the wounded man to the place where he will win back to health "

The decision as to when and where to operate is not merely one of the operation, it is also a matter of how and where to nurse the patient afterwards No nurse, male or female, can attend properly to a patient in a stretcher on the ground or at the most raised up on a trestle The first of the above questions resolves itself into the fact that no operations should be done in any unit that has to remain mobile so long as the patient can be got back in a reasonable time to an immobile unit which has all the facilities of the modern operating theatre and of modern nursing

The surgical work in a field ambulance therefore must be directed towards the second of Colonel Wallace s principles, "how best to move the wounded man " It is a matter of great importance that so high an authority should have publicly enunciated this as one of the two great principles of war surgery There was a great tendency in the earlier days of the war for people to think that anyone with a knowledge of surgery was wasted when he was working in a field ambulance or as medical officer in charge of a battalion, and one was frequently told of some clever youth who had done nothing during many months of active service which could not have been done equally well by a well trained orderly or a third year medical student It is the purpose of the first part of this paper to discuss from the surgical standpoint certain factors connected with the movement of patients which have come to the writer s notice

Factors connected with the Movement of Patients

We must first have some clear idea as to what we mean by the ' reasonable time' within which we must get the patient back to the immobile unit—that is, to the casualty clearing station organised not on the lines laid down in the War Establishments and the Mobilisation Store Tables of 1914, but on the lines in which they may be seen in the stationary warfare of to day

It has long been recognised that for the successful treatment of an abdominal wound the number of hours which have elapsed between the time that the man was hit and the time at which he arrives at the operating unit is inversely proportional to his chances of recovery, and it has been the aim and object of all to get this class of case into the operating unit with the utmost rapidity

But as the principles of wound treatment have developed it has become clear that the same rapidity should be aimed at in all cases The latest notes on Carrel s treatment say "Treatment should be begun, if possible, within 12 hours of receipt of wound, and not later than 24 hours if the maximum success is to be obtained " Our ideal should be then, to get every case back to the C C S at the quickest possible moment, in the same way as we now try to do with abdominal cases

The actual number of hours is however, not the only factor to be considered Some cases are suffering so severely from shock that to get them down to the C C S in the shortest possible time results in their arriving moribund and it is necessary in some cases to delay the journey several hours or to use some means of transport other than the most rapid if it is likely to lead to less jolting on the journey

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[1] THE LANCET 1917 i 561

Our subject then falls under two heads —

1. Under *collection*[2] *and evacuation*[2] (*a*) to consider whether we can get every wounded man into the C C S in the shortest possible time, which in one part of a line may be four hours or under and in another 12 hours or over (*b*) If we cannot evacuate to the C C S all cases within this time, to decide what steps can be taken to get down selected cases and what are the cases to which this preferential treatment should be given

2 Under *prevention of shock and collapse* to consider what can be done (*a*) by the general principles known to civil surgery, (*b*) by the application or improvisation of special appliances for certain types of cases, (*c*) by the selection of means of transport in serious cases

Any steps that we conclude shall be taken should be worked out during the relative quiet of trench warfare We shall always be met by the criticism that you cannot do such things during an engagement To this there are two replies That you may be unable to do all, but that if you have practised them in trench warfare you will certainly be able to do some, whereas if you have never thought of them you will equally certainly do none And that even if you could take none of these steps during an engagement you have still done a useful bit of work by applying them to the casualties of routine trench war

Collection and Evacuation

1 (*a*) The time that a patient takes to arrive at the C C S is partly taken up by his being carried from one post or station to another and partly by the time which he remains at such a station or post. From the time that he is wounded to the time that he is ready to leave the regimental aid post (R A P) he is in the charge of the regimental medical officer, and any speeding up of the time during this stage must be the concern of the medical officer and his commanding officer From the time that he is ready to leave the R A.P to the time when he is ready to leave the main dressing station (M D S) he is under the charge of the officer commanding the field ambulance, and during the stage from the M D S to the C C S he is still under the officer commanding the field ambulance when the deputy director of medical services corps, has decided that this stage of evacuation should be done by field ambulance transport This is usually the case in normal trench warfare where the field ambulance transport is not pressed to get its proper work done This is to collect the cases from the advance dressing station (A D S) to the M D S

It is clear, then that any speeding up in the collection and evacuation of cases can either be done by the transport between these various points moving at a greater rate or by the time during which they are kept at the various points being shortened Now the time that any form of transport takes to move over a given road, path, or track cannot vary much, and as will be urged later, it is possible that such rapid movement does more harm by causing increased shock than it does good by getting the patient along more quickly

If any time then is to be saved it must be done by shortening the periods during which the patient remains in the various stations Part of this time is of course taken up in examining, dressing, and feeding the patient but for the rest of it he remains in the ward resting till it is his turn to go on to the next stage If transport could be ready so that every patient were sent on to the next station the moment he was dressed and fed and the personnel at the next station could be informed of the exact time he was arriving then every case would arrive at the C C S in the minimal period of time

This on the face of it is impossible, because it would mean that if cases came into the A.D S in a bunch every one would have to be dressed and fed simultaneously, whereas if they arrived one by one a fresh vehicle or other means of transport would have to be called out for every minor case with the result that a gross waste of transport would occur

The matter is made more difficult by the facts that in many places collection from the A.D S to the M D S can only occur by transport by night that the distance is too great for hand carriage to be possible for every single case, that hand carriage even from the R A P to the A D S may be impossible by day Further, it may be inadvisable to send cases on from the M D S to C C S at certain times of the day, either because it is too hot by daytime or because it is too cold by night

We see, then, that our ideal that every wounded man should arrive at the C C S in the minimal time is one to which we cannot attain, and all we can do is to make the average time for all wounded cases as short as possible by an efficient organisation and administration

Selection of Cases

1 (*b*) But if we cannot get every case down to the C C S in the minimal time we can do much to get down within this time certain selected cases Where early operation may save the man s life or limb we are warranted in taking greater risks We should go over roads and paths under observation from the enemy by daylight We must use transport for a single case more extravagantly than would be justified if it were not for its urgency

What then are the cases for which these steps should be taken? That they should be taken for all cases where the abdominal cavity has been opened and the man is fit to move has long been recognised *With the development of* Carrel's method of disinfecting gunshot wounds" we should like to take these steps in every case of gunshot wound, however slight In the smaller flesh wounds, however, we can hardly claim that the man s life and limb is so endangered by deferring the treatment for longer than 12 hours that we should risk other men s lives to get them down within that time. In wounds of the bones and joints, however we can claim this In all such cases steps should be taken to get them away from the line to the C C S in the minimal time even at great inconvenience to the organisation of the stations on the way and at considerable risk to the R A.M C and A.S C men, whose duty it is to convey them What are the steps which can be taken to secure this? These have already been indicated That roads and paths under observation over which traffic is not normally allowed by day should be open to field ambulance transport for these selected cases, and that this transport should always be at the right spot at the right moment Permission to use such roads and paths can be obtained from the general officer commanding the sector The reason for not normally allowing traffic along such roads is not merely owing to the danger to the person passing along it, this, indeed, is often negligible It is much more owing to the danger to the men who live near the road Frequent movement along a road or path tends to draw fire not necessarily while the movement is going on. The person who bears the brunt is not the man living in the safety of the back area who spends an hour or two once a week getting somewhere near the zone of fire, but the fellow who has to live in that zone of fire day and night, and is lucky to get into the safety of the back area once a month to get a bath It is therefore most important when permission is given to take transport along such a road or path that this permission should not be abused, and that it should be used only for the purposes for which it was given

To have the right transport ready at the right spot and at the right moment is no easy matter Transport may be kept for weeks at one spot doing nothing and then be withdrawn for some other purpose, only to get a small run of cases at that very spot as soon as it is withdrawn The most important thing is to have good communication between the M D S and A D S, and again between this and the R.A Ps ahead In this way the medical officer of the battalion can notify the officer in charge of the A D S that a case is coming along and if the necessary transport is not there it can be got up to the A D S by the time the patient has arrived from the R A.P For this reason it would be well if every M D S and A.D S were on the telephone

But for getting patients down to the C C S in the minimal time it is invaluable and should save many lives An example of what can be done in this way may be given A certain field ambulance collecting from a two-brigade front had an advanced dressing station at a cross roads, up to which the cars went by night but to which permission was given for them to go up by day for the purpose of evacuating abdominal cases only It had been the custom for the case to be brought to the A D S where the medical officer examined it. He then had to send a runner along the trenches to the nearest signal office to send a message to the M D S through the rear brigade headquarters The brigade signal officer found a spare receiver and fitted it in to the A D S, and the code word "GUTS" was used and known at the six signal offices of the battalions in the line, at the two signal offices at advanced brigade headquarters, and at the two signal offices at rear brigade headquarters When the battalion medical officer had a case of a wound in the abdomen he sent this code word both to the A.D S and to the rear brigade headquarters, from the latter of which it was sent by runner to the M D S An ambulance car was then sent up at once to the A D S, where the medical officer in charge was ready expecting the case He looked to see if the case were fit to be sent on and put it straight in the car, which took it at once to the C C S In this way the minimal period was reduced from over six hours to four hours, and far more cases got down in the minimal time than had done so before because everyone was waiting expecting the case as it came along This was done without any acceleration of the rate at which the patient travelled over any given part of the trenches or the road.

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[2] These are technical terms Collection" includes the various stages between the place where the man was hit and the main dressing station of the field ambulance. Evacuation" includes those stages from the main dressing station to the general hospital at the base of which the first only to the C C S is under discussion in this paper Vide Field Service Regulations vol. ii and R A M C Training

Prevention of Shock and Collapse

2 (*a*) This resolves itself chiefly into getting the patients warm All are agreed on this point Before coming abroad the writer had thought he would do much with saline infusion, and brought on six sets of Lane's infusion bag apparatus They have been of great use, but their scope has not been as great as he had hoped There is always a doubt in an abdominal or chest case whether the bleeding has stopped, always a fear in a deep wound of the thigh that it may come on again before the case gets to the C C S In some cases infusion is necessary, even though the bleeding may not have stopped, but in these intracellular infusion is of no use and intravenous is very hard under the circumstances When it is done it must never be done instead of getting the patient warm, but only as an accessory to this When the boots are taken off a man but slightly wounded it is most striking how cold the feet are even on a warm day Hot-water bottles in large numbers are the great stand by This means hot water, and the field ambulance equipment would be very short of utensils in which to heat water if one stuck rigidly to the Mobilisation Store Table. It is the old question of mobility and transport, but everyone feels that a field cooker should be added to the field ambulance on a wheeled transport establishment, and some Soyer's stoves are most valuable under any circumstances Numerous blankets properly tucked in around the patient are the next factor, and this is followed by the hoods and stockings and socks that one can get from the Red Cross

2 (*b*) On the above all are agreed, but what is less generally recognised is that the earlier a limb is immobilised the better will the case be in every way at all stages Shock is enormously diminished by it, and the patient thus stands a better chance of his life Short of this, he is more likely to get severe suppuration when the shock has been great No case of a fracture of the long bone should pass the A.D S without being so treated If it has not been done by the medical officer in charge of the battalion a case of fracture of the femur should here be put up in a Thomas's splint, a fracture of the leg in a back splint with foot-piece and two side splints, of the forearm in an internal angular, and of the humerus either by binding the arm to the side or by a Jones's arm splint

But it is not only wounds involving the bone that should be put up in splints All extensive wounds of the muscles of the limbs should also be so treated at the advanced dressing station and, above all, wounds involving the joints It is not always possible, nay it is generally impossible, to tell at this stage whether the joint is involved, therefore every wound which is near a joint should be treated as though it involved the joint This is especially the case with the knee, where wounds which at first sight do not appear to be anywhere near the joint prove on arrival at the base to have involved it A wound of the knee-joint travels best in a Thomas's splint, and such should be put on at the A.D S If a back splint is applied to any lower limb it must extend from the fold of the buttock to the tendo Achillis Anything shorter than this is useless

But it is not only by the more thorough application of splints that shock can be prevented Every case of a wound involving the abdomen or chest should be conveyed in the semi sitting position with the knees bent A chair can be made attached to the two poles of a stretcher and the relief to the patient when he is put into this is so great that he will fall asleep without morphia, where beforehand he has been groaning with pain.

2 (*c*) The selection of the means of transport is often an important factor, and we must here go back to a point already raised—that the rapidity with which a patient arrives at the C C S does not depend so much upon the rate at which he passes over the ground as the time he is kept waiting at the R A P and dressing stations On the other hand, upon the smoothness with which the transport moves depends very much the degree of shock to which the patient will be subjected In other words, a motor ambulance car is not the best method of carrying a seriously wounded patient it is the worst The next in order of badness is the horse ambulance wagon The best way to move a seriously wounded patient is on a litter or a travois The writer prefers the litter because he has not yet seen any improvisation which enables a patient to be carried in the semi recumbent position in a travois, and with a long distance—say ten miles—the work is more than a mule can do to drag the travois with patient all the way For a short distance a long springy travois is possibly better for a case of fracture The wheeled ambulance-stretcher carriages when drawn by an animal are also good, but a patient who has been in both prefers the litter

In the writer's opinion one litter per section should be included in the establishment of a field ambulance with a wagon transport for the purpose of collection and evacuation of serious cases, and not limited to a field ambulance on a pack establishment merely for hill warfare He firmly believes that the time which would be lost in conveying a seriously wounded case from an A.D S to a C C S would be more than compensated for by the improved condition in which the patient would arrive.

Difficulties in Diagnosis and Treatment

The writer would add a third difference between civil and war surgery to the two enunciated by Colonel Wallace—viz, that the patient is under the care of the corps and not under any individual R A.M C officer This depends upon the fact that cases are passed so quickly from one unit to another that they are never long under the medical care of one man until they arrive at the C C S, and usually until they arrive at the general hospital The difficulty in making a diagnosis and in determining a line of treatment is increased and there is a possibility that the line of treatment adopted by one medical officer may be changed by the next Very likely the second treatment might have been the better had it been adopted from the first, but generally it is worse to change from one to another than to carry through to its conclusion an inferior line of treatment. It is well, therefore, to consider what steps may be taken to lessen this difficulty under which we work.

1 The most important thing is to standardise lines of treatment which have proved useful, and to insist that medical officers in the forward area should begin these and those on the lines of communication and at the base should carry them on when they have been begun This may appear to interfere with the right of each medical officer to treat his patient in the way which he himself thinks best but is necessary under the circumstances The principle has already been adopted in the routine administration of anti-tetanic serum, and might well be extended to definite rules as to the way in which certain cases of fracture should be splinted and classes of cases should be carried, kept, or hurried on to the next stage It will then rest with each medical officer to decide in any individual case whether he should take the responsibility of diverging from the line of treatment laid down

2 By instituting classes of instruction for medical officers from the base in the forward area where they could learn the difficulties under which the work is there done and at the base for medical officers in the forward area so that they could appreciate the importance of beginning some approved line of treatment at the earliest possible moment Schools of instruction have given excellent results in other branches of the service Medical officers with the field units have not had opportunities of learning methods of treatment which have been developed since the beginning of the war except by utilising brief periods of leave at the base when they have

had there some friend who has been able to show them around Medical officers at the base, especially the surgical specialists at the C O Ss and hospitals, would get a wider view of war surgery if they had the chance of going around the forward area on one or two nights and learning the conditions under which cases are collected from the firing-line

3 To consider as serious all cases which may possibly involve some important organ An accurate diagnosis can seldom be made by a medical officer who only sees the case for a short period Thus, many wounds of the buttock ultimately prove to have penetrated the pelvic cavity, and it is well to have a rule that every wound of the buttock other than a superficial through and through injury should be classed as an abdominal case, again, the early immobilisation of a wounded knee joint is so important that every case with a wound anywhere near the joint should be put up in a Thomas's splint at the earliest possible moment In each of these classes nine cases might be sent down with injuries that subsequently prove to be slight, but in the tenth the surgeon at the C C S has been given a chance to save the life or limb which he could not otherwise have had

4 Careful and accurate notes on the back of the Field Medical Card There is often a tendency to remove a dressing at the A.D S which has been put on at the R A.P or to re dress at the M D S a case that has already been efficiently dealt with at the A D S These repeated dressings lead to an increase of shock, and yet if there are no notes on the back of the card the medical officer at each stage is almost bound to look at the wound in order to decide what should be done An entry by the medical officer who first sees the patient of the time at which the wound was received is a great help, as is also an entry of the pulse-rate at each stage of the journey

5 To have some broad rules laid down as to the *administration of morphia* This decision is a most difficult one The medical officer at the R A.P is tempted to give a large dose because he feels that some heroic step must be taken to relieve the man of his pain over the next stage of his journey The patient then arrives at the M D S or C C S in a delirious state so that it is impossible to determine whether he is suffering from an excess of morphia or whether he is in a most critical condition as the result of his wound, and the decision as to the next step is a leap in the dark Doses of half a grain nearly always lead to these difficulties Instead of being comfortably under the drug the patient is restless and has lost all control over himself Every attempt to examine him, to dress him, or to move him into a more comfortable position is frustrated by the man himself It is said that smaller doses given at a R.A.P have no effect in relieving a severely wounded man Much can be done however, by paying particular care to move him in the most comfortable position If this is impossible it is better for the patient to undergo that pain until he arrives at the A.D S where he can be more efficiently splinted and where he can be put into a position which will automatically relieve him In the writer's opinion it is unwise to give more than one sixth of a grain, which can be repeated at the A.D S and M D S if necessary

Indications for Operation in Field Ambulance

Should any operations at all be done in the field ambulance? It must be admitted that the indications are but few

1 Abdominal cases which are too bad to be sent on to the C C S, but in which operation gives some slight hope of recovery These cases are extremely rare They are cases in which there is reason to believe that hæmorrhage is continuing but if the man is too bad to be sent on he is almost certain to be too bad for an *operation* and there is always the chance that the bleeding has stopped when it would be better to leave the man for several hours and to send him gently on after he has *picked up a bit.*

2 Cases needing immediate amputation These, again are very rare and are practically limited to those in which the limb is hanging by a piece of skin or a tendon which merely has to be snipped through Such can hardly be called an amputation, and if anything more *is needed the* man can either be sent on or is too bad for anything to be done

3 Cases of bleeding from a single large vessel. These seldom find their way into the M D S, as they are dead before arrival If a case is wounded close by a dressing station it may be possible for the medical officer to ligature the vessel with or without an anæsthetic being given

4 Cases of bleeding from more than one small vessel in a large muscular wound When a case arrives where the dressings have come through with the blood perhaps dripping on to the ground, where the pulse is rising, and the application of a fresh dressing does not promise to stop the bleeding, it is necessary to operate in order to pick up the bleeding points In such a case probably the best thing to do is to excise the wound and to insert the tubes necessary for Carrel's treatment The number of such cases is not great

I have not yet seen a case of head injury in which an operation in a field ambulance came within the bounds of discussion Supposing a field ambulance were in such a position that no cases could be got back to a C C S within 36 hours, and this delay was due to the distance of the M D S from the C C S and not to the time spent in collection of wounded, the M D S of the field ambulance would then take the place of the C C S as the operating unit, and the indications for operation would be increased

Illustrative Cases

The following cases, which have passed through the field ambulance under the command of the writer during the last three months, illustrate most of the points which have been considered in this paper In the area where we were working the A D S was some 2000 to 3000 yards from that part of the line where most of the cases occurred They were hand carried back to the A D S by trench or across country, but this could only be done in daylight for very exceptional cases From the A.D S to the M D S was 4000 yards, including an ascent of 200 feet and a descent of 500 feet Over this stage cases were taken by litter or travois, but evacuation originally was only permitted by night At a later stage the general officer commanding the brigade holding this part of the line gave permission for mules to be sent over the hill in daylight, and the following order was published "The waiting litter may be sent down in daylight with any abdominal case, severe case of hæmorrhage, or of fracture of a long bone, especially of the femur, and such other case as the officer in charge of the A D S thinks may urgently need immediate evacuation Injuries of the head or chest should not normally be classed under this last head." From the M D S to the C C S was a journey of ten miles along a road, and all the serious cases were sent down, under the charge of a selected orderly, in litters as being less likely to shake the patient than an ambulance wagon The rate of movement of the litter along the road is the same as that of an ambulance wagon On one occasion, owing to a danger of the dressing station getting overfull, we wired for a motor ambulance, but found that the time taken up in getting the wire through and for the motor ambulance to arrive was so much that the patient would have arrived earlier at the C C S had we ordered a litter from our own transport at the same time as we sent off the signal message There was therefore no advantage in either form of ambulance wagon over the litter, and this certainly had the advantage over them of shaking the patient less

Fractures of Long Bones

CASE 1 —Sergeant —— sustained a gunshot *wound* thigh (left) with fracture of the femur and arm (left) at 1.10 A.M on May 30th He arrived at the A.D S at about 3 30 A.M where the large arm wound was dressed and the lower limb put up in a Thomas's splint by Captain Milton From here he was sent on to the M D S on a litter with the limb swinging from an iron bar and his body propped up with a back rest fixed to the stretcher He reached the M D S at 7 A.M and was sent on at once to the C C S where he arrived at 11 A.M He was therefore 9 hours 50 *minutes* on the journey including the time taken to dress him and to put on the splint This was our record for rapid evacuation and was a most creditable performance for all persons concerned It was not reached until we had been in this part of the line for two and a half months

Unfortunately at the C C S signs of gangrene appeared in the toe of the left lower limb and an amputation was necessary a streptococcus was isolated from the lower limb and the *Bacillus perfringens* from the upper limb and he died a short time after the amputation

CASE 2 —Private —— is a more successful case of a fracture of the femur He was wounded on the same piece of ground as the last case at 4 A.M on May 17th He was put up in a Thomas's splint by Captain Milton at the A.D S and went on to the C C S with the greatest comfort Here he was operated on and treated by Carrel's method and when seen by the writer at the base on May 30th was doing very well indeed

Cases Illustrating the Question of Morphia Administration

CASE 3 —Private —— received multiple gunshot wounds of both lower limbs the left arm face and penis Most of these were small in character He was wounded at 2 A.M on May 9th and reached the

M D S at about 9 A M His lower limbs were first dressed by cleaning and shaving and application of gauze soaked in eusol with back splints on each limb At the same time the part of the head round the scalp wound was shaved and dressed Attention was then paid to the left arm Here there was an entirely different type of wound The biceps was blown away with the brachial artery and median nerve completely divided Two things were clear: that he could not be sent on without this vessel being secured and that he was not then in a fit state for an anæsthetic after the long dressing to which he had already been subjected No note had been made on the Field Medical Card that the most important wound was on the arm Had such a thing been done attention would have first been drawn to it and the other wounds might have been left till later At 5 P M an anæsthetic was given and Captain Price Harris ligatured the brachial and redressed the arm The man was sent on next morning already toxic He had his arm amputated at the C C S on arrival but died within the next 24 hours

It is possible that this is the only case which has been through our hands in which an amputation should have been done in the M D S It is probable that short of this we should have done a complete excision of the wound and not have been satisfied with mere ligature of the vessel We might easily have sent him down the line earlier than we did Every step that we took in this case was either wrong or done in a hesitating manner The patient had been given ½ gr of morphia soon after he was wounded and we never knew whether his condition was due to the morphia or to his wound Had we been on firmer ground we might have saved 24 invaluable hours and possibly his life Indecision in such cases is bad surgery but it is very hard to come to a decision under the circumstances

Case 4 —Private —— was a similar case He was wounded in the abdomen at midnight on May 9/10th and arrived at the M D S at 7 A.M He had had ½ gr of morphia He was restless and pale but it was hard to say whether he was under the influence of morphia or suffering from hæmorrhage An abdominal case was just leaving the M D S for the C C S so another litter was at once ordered and he arrived at the C C S alive at 11 A M with a slightly better pulse than when he had left the M D S but died within about four hours This patient would have probably died in any case and he did not suffer from any indecision on our part but we were quite in the dark over it and when he left the M D S I warned the orderly that he might die at any stage of the journey It may be noted that the time from receipt of wound to arrival at the C C S was 11 hours which was the time taken with practically all the abdominal cases when they were hurried through as quickly as possible

Abdomino-thoracic Wounds of Left Hypochondrium

Case 5 —Private —— received a bullet wound in the left chest below and lateral to the apex of the heart and a wound of exit was found at the bottom of the back of the left chest. Through this protruded a piece of what was taken to be lung by the medical officer in charge of the battalion but which was recognised as being spleen by Captain Milton at the A D S Here he was put into a chair made by Corporal Radmore, R.A M C (T) for carrying a patient in the Fowler position This is built on a pair of stretcher poles so that the body is inclined at an angle of 45° with the vertical and the hip- and knee-joints are bent at an angle of 90° All our abdominal and thoracic cases have been carried in this during the last three months Captain Milton reports that the change in the man when put into this was most marked he stopped groaning at once and shortly fell into a comfortable sleep so that the dose of morphia which Captain Milton had intended to give became unnecessary

On arrival at the M D S the patient was in a very bad condition It was argued that if he were sent on to the C C S he would die before arrival if he were kept without anything being done he would as surely die, that his condition might be due to the fact that he was still bleeding internally, and that an operation might control this hæmorrhage and give him a chance of life The abdomen was opened The spleen was found divided in two with half sticking through the wound of exit. There was a large rent in the diaphragm with the stomach and splenic flexure high up in the thorax but bleeding had stopped and there was little or no blood in the cavities The diaphragm was sutured but he died while the abdomen was being sewn up

The surprising thing in this case was that he stood so much before he died Had we left him alone he might have stood a chance The writer read Colonel Wallace s second Lettsomian lecture soon after operating on this case and found that it came under two of the indications which he gives for leaving alone an abdominal wound—namely when the patient is so ill that it is doubtful whether he will stand any operation and in cases involving both thorax and abdomen in the left hypochondrium The decision to operate was partly based on what was found in Case 6, while Case 7 illustrates what should have been done

Case 6 —Private —— was wounded at 10 P M on May 20th and died on the journey to the M D S at about 4 15 A M on the 21st There was a large wound through which pieces of the tenth and eleventh left ribs were sticking and a smaller one below the level of the twelfth left rib Post mortem it was found that the small wound was the wound of entry and from here one part of the missile had entered the abdomen near the left kidney while the other had passed into the chest and out through the upper wound There was a small injury to the lower margin of the left lung without any appreciable loss of blood into the left chest but the left side of the diaphragm was pushed up to the level of the nipple with blood in the lesser sac This was not investigated further owing to the difficulties under which the necropsy was done

Case 7 —Private —— was wounded at 11 P M on June 1st and arrived at the M D S at 2.50 A M, thought to be suffering from a wound of the abdomen from a missile which had entered the lower part of the left chest. His pulse was 150 and his general condition so bad that we did not even take him out of the Radmore chair in which he had been brought down from the A D S He was raised up on a pair of high tressels and a heating stove put under him with bivouac sheets hanging on either side to send the heat up In this way we tried to imitate the electric heat bath advocated by Colonel Wallace He improved considerably but unfortunately we overdid it slightly and he broke out into a sweat which reacted on the pulse At 10 A M he was carefully lifted on to the operating table, the bandage was cut up and the abdomen examined No evidence could be found of any intra abdominal injury except that on passing water the last ounce or so contained changed blood There was dullness at the base of the left lung and as we were examining him hyper resonance made itself evident over the front of the chest and the heart began to become displaced He was infused per rectum and left lying on the table till 3 P M when he was fit enough to be dressed The chest was firmly strapped and the patient put back in the Radmore chair and given a small dose of morphia. Here he slept quietly for four hours and in the cool of the evening was sent on in a litter to the C C S where he arrived at about midnight. Next day he was doing well the heart was then displaced over to the right side of the sternum

In the writer s opinion these cases support Colonel Wallace s advice that abdomino-thoracic wounds of the left hypochondrium should be left alone There is always the fear in the surgeon s mind that bleeding still continues and must be stopped at all costs but it may have stopped of its own accord and had Case 5 been treated in the same way as Case 7 I think the man s life might have been saved

Sometimes the diagnosis of a superficial muscular wound of the pectoral region from an intra thoracic injury is difficult in the early stages

Case of Multiple Wounds Operated on at M D S

Case 8 —Gunner —— was wounded near the A.D S at 7 30 P M on May 31st He had a large wound of the right upper arm and chest wall, which had taken away most of the muscles of the front of the arm and anterior axillary wall another of the right forearm on the flexor surface which had left the deep fascia exposed over a circular area of four inches diameter and a wound of the chin which had vertically split the lower lip and shattered the jaw Captain Milton reports that he observed surgical emphysema in the chest wound and sent him down as an intrathoracic injury in the Radmore chair On arrival at the M D S at midnight his pulse was 104 and weak his dressings had come through but in consideration of the chest injury it was thought advisable to leave him alone By 3.30 A M the pulse had risen to 120 and the bleeding was continuing He was put on the table and the wounds examined There was now no evidence of intra thoracic injury but it was clear that points must be picked up from among the muscles to stop the bleeding It seemed well to do the whole operation An anæsthetic was administered by Captain Rawson The large arm chest wound was excised with most of the pectoralis major muscle and portions of the pectoralis minor biceps, deltoid and latissimus dorsi the forearm wound was similarly treated and Carrel s tubes were inserted Captain Petley then operated on the mouth in the same way and removed several pieces of bone including the attachment of the genial muscles His tongue then fell back and had to be held forward with a suture On taking off his trousers to put on pyjamas a small piece of metal the size of a tin tack was found sticking into the skin a quarter of an inch lateral to the right patella. This had probably entered the knee joint and it was clearly necessary to operate on it His mouth condition prevented us sending him on and it was clearly undesirable to give another anæsthetic within a couple of hours of the first We therefore infused him per rectum and after having dressed and breakfasted, lifted him on to a stretcher with a back rest fixed on it Captain Petley excised the skin and fasciæ with the piece of metal *in situ* A hole one-eighth of an inch in diameter was seen in the synovial membrane This was sewn up and 5 c c of ether were injected from the mesial side The limb was put up in a Thomas s splint and the end slung to an iron bar fixed to the stretcher By 5 P M he had sufficiently regained control over the muscles of his tongue for him to be sent on in safety He was sent off at about 7 P M when it had become cool enough for travelling to be pleasant

We have had the opportunity of following this case through the C C S to the general hospital. He has so far had an uninterrupted recovery secondary suture of the mouth wound was performed on June 12th and on the 15th when we saw the dressings changed the arm wound was doing well and was much smaller than when originally seen The knee-joint had never shown any signs of synovitis This case exemplifies the importance of treating all cases wounded near a joint as though the joint was involved The next teaches the same thing from the other point of view

Case of Wound near Joint —Buttock Wound

Case 9 —Lance-Corporal —— orderly to the medical officer was assisting the latter at about 2 P M on March 20th to dress a wounded man when another shell fell near them wounding him in the right forearm with fracture of both bones and spattering his left lower limb Owing to the question of observation he could not be got away till after dark and did not arrive at the M D S till about 10 P M One of the wounds on he left lower limb was on the mesial aspect of the thigh 4 inches above the lower end of the femur The wounds were dressed in the ordinary way and a back-splint put on Doubts were entertained at the time as to whether this wound might have involved the joint but he was not treated as though it had—that is the limb was not put up in a Thomas s splint and the case was not sent on at once so as to ensure early operation but was kept until 6 A M. next morning and sent off then

He was seen at the base on May 30th He did not look as though he would recover He had suffered for a long time from a raised temperature associated with a suppurative arthritis of his knee-joint A streptococcus had been isolated from the blood Two days later the limb was amputated and when seen on June 15th he looked distinctly better

Case 10 —Private —— exemplifies the advantage of looking upon all cases of buttock wounds as potential injuries of the abdominal cavity He was wounded in the upper part of the left buttock at 1.30 A M on May 25th and was sent down in the Fowler position on the Radmore chair arriving at the M D S at 7 15 A.M and the C C S at 11.55 A M. so that the whole journey was 10 hours and 25 minutes He showed no signs of abdominal injury while in the field ambulance but in the C C S two holes in the gut were sewn up and a bleeding mesenteric vessel secured.

I have been able to follow through these cases by the kindness of Colonel T Crisp English and Lieutenant-Colonel Kelly, who each gave up a day to taking me around the stationary and general hospitals of this force during a period of three days leave at the base

NOTE ON
THE GERMICIDAL POWER OF FLAVINE

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THE following few experiments were undertaken in order to obtain data respecting the germicidal power of flavine It will be remembered that Browning and his co-workers[1] claim that in flavine we possess a germicide which is very potent and which is much more active in the presence of serum than in, say, peptone water For the staphylococcus flavine is stated to be germicidal in 24–48 hours at 37° C in a strength of 1 20 000 in peptone water and in 1 200 000 in serum Flavine is also stated to possess comparatively low inhibitory power on phagocytosis

First of all some criticisms of Browning's technique and results may be made before detailing my own experiments

1 In the tests made with staphylococcus and *B coli* the organisms were cultured in peptone water (a poor culture medium) and a 1 20 000 dilution of the 24 hour culture was employed in the tests A loopful of such a dilution yielded "20 or more colonies" In other words, a *very* small number of organisms is the subject of the test In my opinion such a method of testing is fallacious and likely to suggest a germicidal power far above the actual one In all disinfectant experiments a volume containing hundreds at least, if not some thousands, of organisms should be subcultured The reason for this is that the destruction of bacteria by a germicide follows the course of a logarithmic curve if the number of bacteria surviving at successive time intervals be plotted That is to say, there is an enormous destruction of organisms at an early stage, but a small number survives for some time If only a few organisms are subjected to experiment this factor may be entirely masked

2 A great point is made of the increased germicidal power of flavine in serum and apparently the inference is deduced that a similar potency will be exerted upon organisms in pus But is such an inference legitimate? It is very questionable if serum and the purulent discharge of a wound are at all comparable It is well known that serum is a poor culture medium for many organisms (Browning found that *B coli* grows so poorly in serum that it was necessary to add peptone water to it in order to obtain a suitable culture !), while the purulent discharge of a wound may be swarming with organisms In the only experiment with pus quoted flavine 1 2000 was required to sterilise it (a streptococcus + staphylococcus pus), a very different result from serum in which 1 200 000 is stated to be efficient !

3 The germicidal action of flavine is so slowly exerted that Browning adopted not less than 24 hours contact in his experiments I question whether a germicide which is so slow in acting is going to supersede germicides which, even if less potent are much quicker in acting

4 A considerable point is made of the comparatively low toxicity of flavine for leucocytes in phagocytosis experiments The method was to incubate the flavine + serum + leucocyte mixture for 20 minutes and to ascertain what strength flavine inhibited phagocytosis, it was found to be 1 500 Can any inference be deduced from such a test? Surely if the toxic action of flavine on bacteria is so slowly exerted that it requires 24 hours to be completed a similar time should be adopted were it possible for phagocytosis experiments, otherwise there is no comparison between the two for the toxic action on leucocytes might be similarly slowly exerted

I will now pass on to the experiments I have made to test the potency of flavine as a germicide and antiseptic

1 *Inhibitory Power of Flavine on the Development of Organisms of the* B perfringens *Group in Milk*

A similar quantity of dust was placed into each of eight test tubes Recently boiled milk and flavine were added the tubes were heated to 80° C for 15 minutes and incubated anaerobically for three days

The following were the results —

	Milk	Flavine 1 per cent		Result
1	9 0 c.c	1 0 c.c.	– 1 1 000	–
2	9 5 c c	0 5 c c	= 1 2,000	–
3	9 75 c.c	0·25 c.c	= 1 4 000	–
4	9 9 c c	0 1 c c	= 1 : 10 000	+
		Flavine 0 1 per cent		
5	9 0 c c	1 0 c c	= 1 10 000	+
6	9 5 c.c	0 5 c c	= 1 : 20 000	+
7	9·75 c c	0·25 c c	= 1 : 40 000	+
8	9·9 c c	0 1 c c	= 1 : 100 000	+

From this it will be seen that in a highly albuminous medium the inhibitory power of flavine upon the development of organisms of the *B perfringens* group lies between 1 4000 and 1 10,000

2 *Germicidal Power of Flavine upon the Staphylococcus in Broth*

5 c c of broth were inoculated with 0 05 c.c of a 24 hour broth culture of *Staphylococcus aureus* and flavine was added The mixtures were incubated at 37° C and 0 1 c c subcultured into broth after 9 hours and 24 hours Result —

			Result after—	
	Flavine 1 per cent		9 hours	24 hours
1	0 1 c c	= 1 5 000 approx	–	–
2	0·05 c.c	= 1 10 000	+	–
	Flavine 1 : 1000			
3	0 1 c c	= 1 50 000	+	+
4	0 05 c c	= 1 : 100 000	+	+

From this it is seen that the germicidal power of flavine on the staphylococcus lies between 1 5000 and 1 10 000 for a 9 hours exposure, and 1 10,000 and 1 100 000 for a 24 hours' exposure This experiment was repeated with an identical result Under the conditions of experiment flavine is an active germicide, but the number of organisms acted upon, though much greater than employed by Browning, is not large

3 *Germicidal Power of Flavine upon the Staphylococcus in Saline*

An experiment similar to Experiment 2, but substituting saline for broth The results were the same as in Experiment 2

4 *Germicidal Power of Flavine upon the Staphylococcus in Saline*

An experiment similar to Experiments 2 and 3 but using a larger number of staphylococci A saline emulsion of an agar culture was made containing approximately 4000 million cocci per c c

Emulsion	Saline	Flavine, 1 per cent		Result
1 c c	0·5 c c	0.5 c c	= 1 : 400	–
1 c c	0·9 c c	0 1 c c	= 1 : 2,000	–
		Flavine 0·1 per cent		
1 c.c		1·0 c.c	= 1 2,000	–
1 c c	0 5 c.c	0 5 c c	= 1 : 4 000	+
1 c.c.	0 9 c c	0 1 c c	= 1 20 000	+

Using a larger number of cocci, the result is that the germicidal power of flavine lies between 1 2000 and 1 4000—a considerable drop compared with the results of Experiments 2 and 3

5 *Germicidal Power of Flavine upon the Staphylococcus in Human Serum*

Strengths of flavine 1 100,000 1 200 000 and 1 400 000 were first tested, none killed Then the following mixtures were made and to each was added 0·05 c c of a broth culture of staphylococcus Results —

Serum	Flavine 1 2000		*Result*
4 c.c	1·0 c c	= 1 10 000	–
4 25 c c.	0 75 c c	= 1 15 000	–
4 5 c.c	0·5 c c	= 1 : 20,000	+
4 8 c c	0 2 c.c.	= 1 : 50,000	+
4 9 c.c.	0 1 c.c	= 1 : 100 000	+

The germicidal power of flavine *in serum lies, therefore,* between 1 15 000 and 1 20 000 *This is* a very different result from Browning's 1 200,000

6 *Germicidal Power of Flavine upon the Staphylococcus in Pus*

The pus was a pure staphylococcic one derived from an abscess in the neck. 1 c c of pus was mixed with 1 c c of the flavine solution, and after incubation loopfuls were sown into broth and on to agar Results —

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[1] Browning Gulbransen Kennaway and Thornton Brit Med Jour 1917 vol i p 73 (also ib vol ii p 70)

Flavine solution used	Flavine strength in mixtures	Result after incubation of subcultures			
		24 hours		48 hours	
		Broth	Agar	Broth	Agar
1 100	1 200	—	—	—	A few cols
1 : 500	1 : 1 000	+	+		
1 : 1 000	1 : 2,000	+	+		
1 : 10 000	1 20 000	+	+		
1 100 000	1 : 200 000	+	+		

Here even 1 200 flavine did not completely kill the staphylococcus in the pus, judged by the agar subculture (I believe that on the whole agar is a better culture medium than broth for disinfectant experiments), or if we take the broth subcultures, then the germicidal strength lies between 1 200 and 1 1000

All the mixtures of flavine in the foregoing experiments were incubated for 24 hours before subculturing, unless otherwise stated

Conclusion

From the foregoing experiments the germicidal value of flavine comes out very much lower than that stated by Browning and his co-workers The difference between the two sets of results is probably due to the use in my experiments of a number of organisms much larger than that employed by Browning and his co-workers The result with pus is particularly poor and many disinfectants equal or surpass it and have the advantage of a much more rapid action

Addendum —The above note was written before the appearance of Mr Alexander Fleming's paper in THE LANCET of Sept 1st (p 341) and no alteration has been made in it It will be seen that both in our criticisms and in the results of our experiments there is a general agreement between Fleming and myself.

THE OPEN-FLAP METHOD OF TREATING PERFORATING BRAIN WOUNDS

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EVER since the early days of the war, and more especially before the introduction of steel helmets greatly reduced their number, the problem of how best to handle perforating wounds of the brain has been of absorbing interest The great question following the recovery of the patient from the initial shock resolves itself into our ability to assist nature in isolating the infected area during the period of repair

Though much has already been written on this subject I wish to present for consideration a simple method which, so far as I am aware, has not been used outside No 1 Canadian General Hospital It is one which in the hands of those of us here—Major Mackenzie Forbes, Major S R Harrison, Captain Johnson, and myself who have used it—has given most consistently gratifying results It is based on sound elementary surgical principles—to wit, unobstructed drainage and minimum interference with the damaged parts not only at the time of operation, but during the subsequent weeks of healing Major Forbes, since returned to Canada, was the first to suggest two years ago the leaving down of the flap, but the technique as developed since has been radically changed and simplified

Description of Method

The first step in the operation consists in the turning down of a good sized flap of scalp with perichondrium sufficient to expose freely the whole area of bone injury This flap should, if possible, include the infected wound of entrance

Next, the wound in the bone is enlarged, all depressed fragments being removed, and in addition a margin of healthy dura surrounding the damaged portion of the membrane is exposed. The wound in the dura and brain is disturbed as little as possible Foreign bodies, metal or bone, are only to be sought for if shown, by localising X rays, to be quite superficial. The opening in the dura, if small, should, when the brain is much damaged, be freely enlarged by radiating incisions extending, if need be, to the limits of the bony opening, thus obviating any subsequent constriction of the neck of the hernia cerebri which develops

The next step in the operation is most important A strip of iodoform gauze is firmly inserted between the dura and the overhanging edges of the bony hole The action of this is two fold It, in itself, primarily shuts off the general meningeal space from the infected wound, and subsequently stimulates the formation of the natural barrier of adhesions between the coats of the dura A loose pad of fluffed iodoform gauze is then lightly packed over the whole denuded area

The scalp flap may then be loosely replaced over the gauze, or it may, if considered desirable, be held down (or up) out of the way by one or two silkworm sutures The outer dressings are of plain gauze moistened with saline or boric solution, and should be changed twice daily The iodoform gauze must not, however, be disturbed for from five to seven days. At this date hernia cerebri will be found well developed, and not infrequently, enmeshed in the gauze, will be found small fragments of bone which at the time of operation were buried deeply in the soft substance of the brain, but which have, as Sir George Makins suggests been extruded by intracerebral pressure along the path of least resistance

Cerebral Herniæ

Just a word here on the subject of cerebral herniæ Opinion is divided as to the chief causes of their formation in these cases, some claim that it is entirely due to reactionary increase in the quantity of the cerebro-spinal fluid, and advocate lumbar puncture Personally, I do not believe that this is the chief factor, and my experience of puncturing, done with the object of expediting recession of the hernia in two of the cases which I shall presently report, was not conducive to a repetition of this treatment. Moreover, it is practically not indicated when this technique is followed, since the intracerebral pressure does not unduly rise, if one may judge from the results of frequent fundus examinations In no case was there more than 1 diopter of disc-swelling at any stage, and usually much less Although having no microscopic proof, I incline to the view that the hernia in these cases is largely produced by an analogous process to that which occurs in other parts of the body during the healing of a wound—i e, local increased vascularity, inflammatory œdema, and round celled infiltration.

Whatever be the cause, the fact remains that we can confidently prognosticate the projection of a portion of brain through the wounded dura in the form of a more or less necrotic mass of varying dimensions, except in those cases which are previously overwhelmed by the gravity of their local lesions What, then, happens to this tumour mass if, as was often the case, the flap be re-sutured at the time of operation with or without the use of drainage tubes? In a large number that I have seen—not, fortunately, in all—there was a latent period of from seven to ten days' hopeful convalescence, followed by a sudden rise of temperature and early death from general meningitis The post-mortem findings in these cases showed, beside the picture of a spreading purulent meningitis beginning from the wound margins, that the soft necrotic brain matter composing the hernia had spread out beneath the skin flap and being an ideal medium, had through contact with the wound margins become virulently infected with the result that the limiting adhesions formed by nature had not been sufficient to localise the infection

The subsequent conduct of the case is simple The deep dressing need only be changed bi weekly The hernia reaches its maximum size about the end of the second week and then begins slowly to recede, so that in from four to six weeks it no longer projects above the level of the bony parts, and the whole wound will be found to be covered with healthy granulation The skin flap may now be safely replaced Owing to its elastic retraction it may require a little patience to loosen thoroughly both it and the opposing skin margins to effect good apposition

Results Illustrative Cases

I regret that I am unable to give full statistics covering the actual number of cases that have been treated by this method in our hospital—well over 50 to my personal knowledge—but the results, both as to life-saving and ultimate restoration of function, have unquestionably proved far better by this than by any other method adopted here

The following four cases will serve well, however, to demonstrate what may confidently be expected if this technique be followed. They are selected because of the fact that three of them, in addition to cranial wounds, were complicated by compound fractures of the frontal or fronto-ethmoidal sinuses, thus opening up an additional tract for infection, while the fourth case is that of a rare lesion of the base of the skull involving the cerebellum

CASE 1.—Private E. F aged 32, was admitted on Oct. 16th, 1916, having been wounded four days previously Examination showed a large irregular oblique perforating wound of the right forehead, starting 1½ inches above the centre of the eyebrow and running to almost the inner end of the same. The parts around were swollen, and soft brain matter was exuding from the wound. The right eye was proptosed out and down, with very limited motion vision was reduced to recognition of the figure at 4 feet. Nasal breathing was obstructed The mentality was clear but the patient was depressed and anxious he complained of constant frontal headaches. X ray—two directions—showed a large hole in the frontal bone with presence of large foreign body in post-nasal cavity which was removed with difficulty on account of its size through the naso-pharynx and mouth. Operation next day A frontal flap was turned down the frontal bone was badly comminuted, involving in addition, both plates of the frontal sinus The roof and inner wall of orbit with right ethmoid cells were disintegrated. The flap was replaced on Nov 22nd, five weeks after primary operation, and the wound healed without suppuration.

The functional results in this case were particularly gratifying both as regards sight and brain function, and for two weeks before discharge to England the man was able to do light hospital duty

CASE 2.—Lance Corporal D., aged 20 was admitted on Sept. 19th, 1916. Examination showed a through-and through wound of the head, entrance in front of the right ear exit about the middle of the forehead, half an inch above the level of the eyebrow The patient was rational but very low-spirited— wants to die." There was constant frontal headache the right eye was destroyed, and soft brain was oozing from the frontal wound. X ray of the head was negative for foreign body In this case a single flap could not be used, so after removing the eye, an incision similar to that used in the radical frontal sinus operation was made and the soft parts retracted.

In this case the large hernia had receded and the wound was closed six weeks after the primary operation. It is worthy of note however, that it was found much more difficult to close than those cases where a good-sized single flap had been utilised. The functional recovery was complete except for the loss of his eye

CASE 3.—Private W aged 21 was admitted on Nov 7th 1916 Examination showed a small, perforating wound half an inch over the centre of the left eyebrow with soft brain and fluid exuding At the operation it was found that the wound in the frontal bone communicated with the frontal sinus, which contained a quantity of bloody offensive pus A fissured fracture of the inner table of the frontal sinus extended down to the infundibulum. In this case in order to determine whether lumbar puncture might hasten the recession of the hernia, on the fourteenth day after operation 15 c.c. of fluid were drawn off no immediate result was observable, but on the next day there was marked reduction in the size of the hernia, and by the sixteenth day not only had it disappeared, but it had become a negative quantity so that, in lieu of a tumour there now presented a distinct cavity in the anterior lobe of the brain, the size of a pigeon's egg The patient at this time complained of severe recrudescence of headache and his general disposition became markedly depressed. Nothing was done except to dress the cavity daily and by the twenty-fourth day it had become almost occluded by approximation of its walls. On Dec. 7th four weeks after operation the flap was re-sutured In spite of the fact that the bone over a considerable area beneath the flap appeared dry and dead looking primary union occurred.

CASE 4.—Private D., aged 23 was admitted on Nov 15th 1916. The patient had had an operation at a casualty clearing station and the wound had been sutured. The diagnosis received was shell wound cerebellum right fragment of shrapnel removed Two days after admission he complained of increasing headache, and the wound broke down in the centre discharging soft brain matter In this case a posterior flap was turned backwards, and held in place by sutures Hernia of the cerebellum, much disorganised, was found to be present beneath the skin flap In this case, on the eighth day after operation there was a thin fragment of bone extruded into the dressing an inch and a quarter long and a quarter of an inch wide. This patient also was subjected to lumbar puncture at the end of the second week, with similar results, though not so extreme, as in the last-quoted case. The hernia did not entirely disappear but there was marked disturbance of the patient's *bien-être*, with recurrence of headache and leakage of serum which I attributed to the traction on the protective barrier of dural adhesions around the bony opening The flap was successfully closed at the end of the fifth week, at which time there were no functional evidences of cerebellar anomaly

AMBULANCE TRAINING IN INDIA.—From a statement issued by the headquarters of the St. John Ambulance Association in Simla it appears that during the nine months ending June 30th 1917 the St John Ambulance Association in India and Burma instructed 11,955 persons in first aid to the injured 787 in home nursing 1216 in home hygiene and 65 in sanitation Of these 5962 have been awarded certificates 165 vouchers 55 medallions and 27 labels for proficiency in first aid 417 for proficiency in home nursing 309 for proficiency in home hygiene, and 35 for proficiency in sanitation

A NOTE ON MEDIASTINITIS AS A CAUSE OF HEART FAILURE

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AFTER a massive gunshot wound of the neck, resulting in a gangrenous cavity which involves most of one or both anterior triangles, the possible causes of death are obvious, such are secondary hæmorrhage septicæmia, or, if the air-passages are involved, septic pneumonia In these cases it is not necessary to invoke a spreading infection in the cervical fascial planes to explain the result. In a second class of case a cellulitic spread of infection must be admitted, and is indeed apparent I refer to small wounds which, communicating with the retropharyngeal space, initiate a retropharyngeal infection with or without a macroscopic abscess In such an event a spread by the fascial planes is prevented and combated by surgical drainage And drainage at this level in the upper and mid-cervical region, is fairly easy But it is otherwise lower down, as we approach the thorax. And there is another, third, class of case much more distressing and difficult to deal with, to which this present note has reference

A patient arrives with a truly insignificant wound anywhere about the neck—so insignificant that, at first glance, surgical intervention would hardly be considered. There are no signs, local or general, of inflammation But, consistent with an increasing difficulty in swallowing or breathing or both, stereoscopic skiagraphy shows a foreign body, which, though quite small, is very deeply placed. The signs of pressure persist and increase, and so the foreign body is removed In less than 48 hours the pulse and respiration rate have increased alarmingly and in fits and starts This, with an erratic temperature, is the only sign that things are going wrong But adequate surgical drainage and cardiac stimulants are unavailing And in a day or two, without having even looked ill or lost his colour, the patient dies

The medical officer before he sees the autopsy would excusably explain such a clinical history by assigning the cause of death to (1) shock, (2) septicæmia, or (3) heart failure Let us briefly consider these.

1. *Shock.*—Due to what? If to the injury, it may be asked why the patient was so well when first seen. If to the operation, it may be stated that this was neither extensive nor lengthy enough to cause shock, which, moreover is hardly consistent with the fact that his tachycardia and rapid breathing alternated with periods of nearly normal pulse and respiration rate, that until the end his colour remained good, and that his temperature was irregular, not consistently low

2. *Septicæmia?*—The patient may have died before there has been time to search for organisms in his blood, so this explanation is suppositious.

3. *Heart failure?*—That this has occurred is clinically obvious, but why should the heart have failed?

Of the following three cases the salient features are quoted, without details to illustrate the onset of vagitis

CASE 1.—Private, admitted August, 1916, with a small clean incised wound 1 inch long over the thyroid cartilage Except for this the whole neck was, and remained until death, normal. Temperature was intermittent up to 101° F., pulse up to 100 Respiration rate hovered around normal but dyspnœa and hoarseness were constant and increasing Lungs and heart were normal. Aided by skiagrams, a piece of shrapnel casing 1 inch by ½ inch, was easily removed from over the left lobe of the thyroid gland, just below the level of the cricoid cartilage deep to the infrahyoid muscles, at about the point where the recurrent laryngeal nerve passes beneath the inferior constrictor muscle. The operation wound was dressed with very light packing of ribbon gauze and resulted in instant relief of symptoms. On the second day pulse and respiration rate rose so fitfully that it was difficult to chart Cardiac stimulants proved useless he died on the third day

The operation wound down to the œsophagus was found to be quite clean. In the prevertebral space there was a layer of purulent lymph from the thyroid cartilage to vertebra D 2 involving both vagi.

CASE 2.—Private B., admitted August, 1916. A shrapnel bullet which had entered behind the angle of the left mandible and traversed the mouth and palate was removed from the right antrum. The entrance wound which was directed inwards to the prevertebral region, was kept dressed with saline the patient's condition precluded any exploration under an anæsthetic. Temperature was intermittent up to 102° F Pulse varied from 100 to 140. Respirations varied with startling suddenness from 20 to 60 From the second day until his death the left pupil was widely dilated to 12 mm. with no reaction to light. Lungs and heart were normal. He died on the fourth day

There was a thin layer of purulent lymph in the prevertebral region of the left side from the pharynx to vertebra D 3 this involved the left vagus and sympathetic. There was no macroscopic retropharyngeal abscess

CASE 3 —Private P admitted April 1917 with a clean skin wound ½ inch long in the mid line of the thyro-hyoid space There were no other signs of injury and none of inflammation Temperature was normal He had increasing dysphagia and spasmodic dyspnœa. Stereoscopic skiagraphy showed a foreign body hardly as large as the little finger nail, just to the left of the mid line opposite vertebra C 7 and 2 inches from the front surface of the neck

Operation.—A probe would only pass along the track from the skin wound for 3 inches Since therefore the foreign body could not be removed by this route a formal dissection was made along the anterior edge of the sterno-mastoid tendon It was now seen that the probe in the original track passed deep to the sterno-thyroid muscles and there ceased abruptly The sterno-thyroids and sterno-hyoids were then divided and reflected sufficiently to pass a finger down to the vertebra. Here a small piece of shrapnel was found lying in a pool of turbid grey fluid, which welled up as fast as swabbed away Subsequent staining with osmic acid showed this fluid to be chyle But in case the œsophagus were wounded as well as the thoracic duct, an œsophageal tube was passed The operation wound was drained by tube The operation which lasted 20 minutes was practically bloodless and relieved all symptoms completely

On the following day the patient gradually developed an irregular temperature and spasmodic rapidity of pulse and respiration just like the other two cases On the third day these attacks merged into a chronic tachycardia (160) and rapidity of breathing (40) and the pupils became fixed (3 mm) Heart and lung sounds were normal but diminished There was no hiccough or other diaphragmatic upset to suggest that the missile had injured the phrenic nerve. Cardiac stimulants and oxygen were unavailing The wound remained quite clean and the man s colour good until he died on the fourth day

After death the wound from skin surface to prevertebral fascia, was found to be absolutely clean. But on stripping the œsophagus from the spine a layer of purulent lymph was found from the level of the carotid bifurcation to vertebra D 2 this purulent lymph involved both vagi of which the left was irregularly infiltrated and thickened to ¼ inch for 6 inches of its length. There was no trace of the thoracic duct higher than vertebra D 3, nor any wound of the œsophagus

Commentary —In Case 2 the foreign body passed through the retropharyngeal space The patient therefore belongs to the second of the three classes of cases mentioned in the opening words of this note And naturally the infection spread to the posterior mediastinum, his condition never allowed of operation, and he was doomed This case is mentioned only on account of changes in the pupil of the affected side—which aided in the diagnosis

The two other cases were more distressing, because they were on admission seemingly fairly healthy men, with trivial wounds Despite operative and post-operative care, infection tracked extensively in the planes of the neck. In the light of such findings it is easy to understand why Crile recommended that for such operations as laryngectomy the cervical fascial planes should be opened up several days beforehand, and packed with gauze, so as to stimulate the formation of barriers of granulation tissue, defensive against infective spread

Diagnosis —The temperature is very irregular It may rise to 104° F and again fall, it may remain up or down for only an hour or for two days There is no suggestion of periodicity in the pyrexia The most characteristic feature is the sudden alternation of pulse and respiration rate Thus, in Case 2 respirations in a moment changed from 20 to 60 and then after half an hour again back to 40 Following a deep wound, however small, anywhere in the neck, and although the prevertebral space may not have been obviously opened, this startling alternation (especially if accompanied by an altered size or mobility of one or both pupils, indicating involvement of the sympathetic) forms a symptom-complex. The diagnosis is vagitis due to mediastinitis Such cases are, as stated above, often diagnosed simply as heart failure, shock, and so on.

Treatment —The changes may be rung on cardiac stimulants with no success Surgical cleansing of the wound right down to the spine is no safeguard It would naturally seem that in the after treatment of very deep wounds in the neighbourhood of the thoracic inlet posture is important We should, as a matter of course, wish the patient to lie, if not on his face, at least semi prone on the affected wide, with the head low But with the acceleration of pulse and respiration orthopnœa is insistent, and it is not possible to keep the patient lying down. The anatomical difficulties of good surgical drainage at the thoracic inlet are great

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DONATIONS AND BEQUESTS —The late Dr John Henry Bartlet, of Birkfield, Ipswich, Suffolk, senior surgeon and honorary consulting physician to the East Suffolk and Ipswich Hospital, after making provision in his will for a number of legacies, including £100 to the Suffolk Convalescent Home left the residue of his property, about £200,000, to the East Suffolk and Ipswich Hospital for a home of recovery for invalids

Reviews and Notices of Books.

Les Fractures de la Mâchoire Inférieure By L IMBERT and P RÉAL With 97 figures and 5 plates Paris Masson et Cie 1917 Pp 151. Price 4 francs

THIS manual is the combined work of L Imbert, of the School of Medicine of Marseilles, and P Réal, a well known dental surgeon. This is an ideal combination of activity, for gunshot injuries of the jaw beyond ordinary surgical treatment require for the manufacture of proper splints the aid of those specially trained in dental surgery The work of Claude Martin has had a profound influence on those treating this type of injury, with the result that the main object in treatment has been to restore the teeth to their normal occlusion, even at the risk of only obtaining fibrous union Against this method the authors enter a strong protest and maintain that osseous union should be the goal, providing that in obtaining it the function of the teeth can be maintained The authors advocate that in cases of non union the edge of the fragments should be freshened and the parts fixed by metal plates The results, they consider, are satisfactory The reader turns with interest to the section on bone grafting to see if the authors have been able to elaborate a method which will ensure success The results recorded are not gratifying There is a very full account of the various appliances used for immobilising the fractured jaw as well as a valuable note on the question of compensation for injuries of the jaw

The authors take up a practical standpoint, and it is interesting to note that the views advocated are almost identical with those expressed by Mr J F Colyer in his papers published in the *Journal of the Royal Army Medical Corps* for April, 1916, and the March and April issues this year of the *British Dental Journal*

An Index of Symptoms, with Diagnostic Methods By RALPH WINNINGTON LEFTWICH, M D Aberd Sixth edition London Smith, Elder, and Co 1917 Pp 555 Price 10*s* 6*d* net

IT is only two years since the last appearance of this compilation, but it is evident that Dr Leftwich's ingenious industry is essential during war time Few new symptoms appear but two minor additions have been made in the light of experience although logically somewhat outside the scope of the book One of these is a collection of brief descriptions of rare diseases to which attention is called in the lists of symptoms, but which the author fears his reader may search for in vain in current text-books Such a fear we should hope to be ungrounded in the case of paratyphoid fever, tetany, and some others that might be enumerated A list of eponymous signs now facilitates reference to further symptoms when the spoor of a disease has been a sign with an individual name attached—e g , under Deafness, Nervous, the names are given of Bárány, Dundas Grant, Gardiner Brown, Schwabach, and Weber The book remains in its new edition a sound display of logical discrimination and of restraint in its application It might fairly bear as a sub-title, "The Essentials of Diagnosis " In future editions the electro-cardiogram might suitably find a place alongside the sphygmogram

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The Practitioner s Medical Dictionary By GEORGE M GOULD, A M , M D Third edition, revised and enlarged, by R J E SCOTT, M A., M D London H K Lewis and Co Pp 962 Price 17*s* net

THE third edition of this dictionary contains, so the compilers estimate, 20,000 new words, and the addition has been made without detriment to the compactness of the volume by the use of thinner paper, slightly reducing the size of the type and omitting unnecessary illustrations The result fully justifies the labour expended on its production, the book as it now stands being complete, accurate, and up-to-date as well as very pleasant to handle During nine months' constant use we have failed to find any important omission The dictionary is a little more inclusive than the title implies as in addition to derivations, formulæ are given and the dates of birth and death of those who have given their names to diseases or symptoms The book may be recommended as a desk companion to all practitioners who wish to read intelligently and to write accurately

Anæsthetics A Practical Handbook By J BLOMFIELD, M D Cantab Fourth edition. With numerous woodcuts London Baillière, Tindall, and Cox. 1917 Pp viii. + 147 Price 4s net

Dr Blomfield's book maintains its high character for usefulness It is a model of condensed statement and intended, as it is, for beginners in the art of giving anæsthetics fulfils its aims admirably The author considers it is best to omit detailed statements about the more intricate methods, such as intratracheal insufflation, intravenous and colonic etherisation, although he mentions the Dämmerschlaf scheme in parturition, spinal and parasacral anæsthesia The chapter on these last methods, we venture to think, might with advantage be put a trifle more fully, and this suggestion applies with equal force to the sections on local and regional analgesia Indeed in these we find that Dr Blomfield still recommends cocaine rather than the use of the novocain suprarenin solutions now usually adopted. We may assume that anoci association is not regarded by Dr Blomfield as a student's method, and so is omitted A useful, if brief, résumé of war methods is added in this edition and should prove valuable The subject of anæsthetics has become so wide that any attempt to envisage it in a small compass presents great difficulties, while the decision as to what should be retained and what omitted is not an easy one, however, we feel that Dr Blomfield has probably done the best possible He writes with much lucidity and his teaching is sound and perspicuous We note that by a slip Trendelenburg is wrongly spelt in several places

LIBRARY TABLE

1. *The Principles of Rational Education* By CHARLES A. MERCIER, M D Lond., F R C P Lond, F R C S Eng, late Examiner in Psychology in the University of London London The Mental Culture Enterprise Pp 87 Price 2s 9d net —2 *The Public School System in Relation to the Coming Conflict for National Supremacy* By V SEYMOUR BRYANT, M A With a Preface by Lord RAYLEIGH 1917 London Longmans, Green, and Co Pp 78 Price 1s 6d net —1 Dr Mercier's book is intended to bring home against the public schools and universities the charge that through their routine the originality has been crushed out of many of his friends, who have been turned loose in the world ignorant of that world and unable to conduct an argument logically or to write intelligible English legibly So much we learn from the prefatory words He proceeds to deal with the standards and aims of education in a brilliant and summary manner, and covers in a few pages so much ground that he cannot expect any journal with a definite scope like THE LANCET, to criticise his opinions in detail, but Dr Mercier might not admit the justice of any criticism unless the authorities for it were set out with particularity, and this would be a very long task, and would also require a wide range of specialised knowledge In some places to explain a disagreement from his conclusions or assumptions would entail—given the ability on the part of the disputant—the writing of a book larger than that in which Dr Mercier aggregates his accusations against the training of our youth along literary or scientific ways Dr Mercier will not be able to convince his readers that he is always right, for indeed, while he tells us much which thinking people believe some of his diatribes are not made just by their wit But at any rate he shakes us out of self complacency and paves the way to reform

2 Mr Seymour Bryant s pamphlet might well be read at the same time as Dr Mercier s essay He deals with education in preparatory schools and the public school curriculum in considerable detail showing the time employed in various subjects and the vagaries of the marks allotted to these subjects making special reference to the evils of classical specialisation and to the failure at most schools to educate their youth either in science or modern languages We take it that the book was largely written for the sake of the chapter in which the role of science in the educational scheme is fully set out and the plea here is that classical specialisation should not hamper the study of natural philosophy A final chapter on constructive policy has been dictated by the author s decision that the existing public school system cannot satisfy the needs of the day and that the only remedy is to replace it by a new organisation He outlines such an organisation, and, to some extent, his ideals of reform would meet Dr Mercier's criticisms

We recommend these two small books cordially to every body, for they cannot fail to make us look closely at the methods under which our young men and maidens, especially youths of the upper and upper middle classes, are educated. If, as a result we find ourselves dissatisfied with the ideals, the practical aims, or the effective results of such education we should be encouraged to help in altering the system

The Medical Annual, 1917 Bristol John Wright and Sons, Limited Price 10s net —This useful "Annual" keeps up its usual standard in the volume for 1917, the thirty fifth year of publication In his brief preface the editor calls attention with justice to the fact that at the present time, when every department of medicine is understaffed there is a remarkable indication of general energy and ability in the pursuit of the healing art The "Annual" has been successful in putting the practitioner in touch with the main results of all this recent energy Of the longer articles we should like to call special attention to those on gunshot wounds and wound infections by Deputy Surgeon General A G Wildey, on war injuries of the jaws, by Mr W H Dolamore, on poliomyelitis, by Dr J R Hunt and Dr F Langmead, and soldier's heart, by Dr Carey Coombs The usual summaries of therapeutic progress, electro-therapeutics, and new inventions appear, and the care and precision with which the work is produced are evident on every page

German East Africa By ALBERT F CALVERT, F C S London T Werner Laurie, Limited 1917 Pp 122 Price 6s net —Mr Calvert gives a succinct account of the early history of the German colony The notorious Dr Carl Peters was the pioneer of the German Colonial Empire in Africa In 1885 he founded the German East Africa Company, endowed with treaties which he had obtained and which professed to give rights over some thousands of square miles This was Germany's largest colony larger than Germany itself, but with a population only of 7½ million natives and 5500 whites Rubber, sisal hemp, cotton coffee, and capok are the chief products Twenty years ago Dr Hindorf imported a few sisal plants from Central America, but of 2000 plants only 72 could be kept alive and yet to-day there are millions of plants cultivated This was the most important product for export at the time of the outbreak of war At the end of the book are collected 219 photographs and maps giving a lucid panorama of places and people

JOURNALS

Quarterly Journal of Experimental Physiology Edited by E A. SCHÄFER, W D HALLIBURTON, C S SHERRINGTON, E H STARLING, and A D WALLER Vol XI, No 1 London Charles Griffin and Co, Limited 1917 Pp 1-126 Price 7s 6d —The Influence of Corpus Luteum Extracts upon Plain Muscle, especially that of the Uterus, by M Itagaki, with Appendix, by W W Taylor That the corpus luteum is a gland of internal secretion was first suggested by Prenant who, in 1898 arrived at his conclusions from the morphological character of the cells The author's methods of preparing the extract and recording the movements of the uterus are described The recording method used was a modification of the method devised by Magnus for the plain muscle of the alimentary canal The uterus of the rat, cat dog, and guinea pig were used The author finds that—

1 Extract of corpus luteum generally produces a distinct increase of tone in the surviving uterus of the rat, rabbit, cat, dog, or guinea pig Rarely, however, the opposite effect is produced 2 This difference of effect is not due to the condition of pregnancy or non pregnancy, nor to varying strengths of the extract, but apparently to a difference in different samples of corpus luteum having an antagonistic action upon the contractions of the uterus 3 These principles can sometimes be separated by alcohol, the inhibitory material going into alcoholic solution But this chalonic substance, which is soluble in water, is very small in amount The hormonic substance, on the other hand, which is generally much larger in amount, is not soluble in alcohol nor in chloroform and ether, but is soluble in water 4 If we compare the action of corpus luteum extract upon the uterus with its effect upon other forms of plain muscular tissue

we find that it generally produces relaxation of the muscular tissue of the intestine and of the bladder of the rat but contraction of the whole intestinal tube of the rabbit and kitten, although when isolated strips of either the longitudinal or circular intestinal muscle of these animals were taken they showed relaxation Upon the iris of the frog no change could be observed 5 Injection of corpus luteum extract into a vein produces but little effect upon the blood pressure, if anything, there is a slight fall 6 A free secretion of milk is caused from the cut nipple of a lactating animal 7 Urinary secretion is not appreciably affected 8 The author was unable to obtain any definite proof that the action of corpus luteum upon the uterus is effected through the nerve endings either of the sympathetic or of the pelvic nerve

The appendix deals with the analysis of ash of corpus luteum of ox.—On the Action of Various Extracts obtained from the Cow's Ovaries upon the Muscular Tissue of the Uterus, Intestine, and Blood vessels, by M Itagaki The author finds that—

1 Extract of hilum ovarii has the opposite effect to extract of corpus luteum upon the movements of rat's uterus, for it causes inhibition instead of contraction The uterus of other animals is affected differently, for in the rabbit, cat, and guinea-pig an extract of hilum usually has the result of producing an increase of tone 2 Liquor folliculi produces an increase of tone of the uterine muscle in the rat, rabbit, and cat, or at any rate an increase in height of the rhythmic contractions 3 When applied to the whole intestinal tube all the extracts tested—hilum, liquor folliculi, and whole ovary—determine an increase of tone, whereas a strip of the longitudinal coat of the rabbit's intestine is sent into relaxation by extracts of hilum 4 A fall of blood pressure is produced by intravenous injection of all the extracts employed—hilum, liquor folliculi, and whole ovary

The Action of Certain Gland Extracts and Drugs upon the Uterus of the Rat, by M Itagaki The following results as summarised by the author were obtained —

1 Extract of posterior lobe of pituitary always produces an increase of tone 2 Solutions of adrenalin inhibit the rhythmic contractions (with or without diminution of tone) 3 Extract of thyroid occasionally produces an increase of tone, but generally has no effect 4 Extracts of orchitic substance, of uterus, and of brain have no appreciable effect 5 The action of nicotine is variable Weak solutions produce an increase of tone, stronger solutions cause first inhibition, then increased contraction, still stronger solutions produce inhibition alone 6 The action of pilocarpine is inconstant, but usually an increase of tone is produced 7 Weak solutions of atropine produce increase of the rhythmic contractions 8 Barium chloride in all strengths which produce any effect causes increased tone and stimulates the rhythmic contractions

The Effect of Thyroid Feeding on the Weight of the Suprarenals and on their Adrenalin Content, by P T Hering The administration of small quantities, 0 2 to 0 5 gm, of fresh ox thyroid daily to white rats increases the size and weight of the suprarenals both in young and adult animals Reckoned in mg per 100 gm bodyweight, the extent of the increase in the 18 male animals examined averages a figure which is equivalent to a rise in weight of from 76 to 78 per cent above the normal This is the result of feeding the animals with the above mentioned doses of thyroid for a period of from three to four weeks Both cortex and medulla participate in the enlargement but the hypertrophy of the cortex is somewhat greater than that of the medulla There is reason to believe that where accessory suprarenals are present they too undergo enlargement The adrenalin content of the suprarenals of the white rat increases, as a general rule, with increase in weight of the animal The amount of adrenalin normally present is about 0 034 mg per 100 gm bodyweight Feeding with thyroid increases the adrenalin content of the suprarenals The average amount in the 18 animals examined averages from 0 049 to 0 052 mg, which is equivalent to a rise in weight of about 50 per cent Owing to the relatively greater increase in weight of the suprarenals resulting from thyroid feeding the percentage amount of adrenalin in them is decreased, though only to a small extent It is probable that the adrenalin in the accessory suprarenals, when these are present, is also increased Rats fed with small doses of thyroid not infrequently die suddenly when apparently thriving In the animals examined which have thus died there is great increase in the weight of the suprarenals and in the adrenalin content The heart is greatly hypertrophied in addition There is evidence that thyroid feeding results in rapid cardiac hypertrophy in white rats —Carbohydrate Metabolism in Relation to the Thyroid Gland II., The Effect of Thyroid Feeding on the Gaseous Metabolism, by W Cramer and R M'Call The experimental observations were made on rats, which, being omnivorous, are specially suited for such observations The present contribution is a sequel to previous studies on the same subject. Observations on the gaseous metabolism in experimental hyperthyroidism confirm the conclusion arrived at on other grounds, that the thyroid secretion produces an increased oxidation of carbohydrates This effect is not due to a direct stimulating effect of the thyroid secretion on the oxidative processes in the cell, but follows upon its action in discharging glycogen from the liver Two stages of experimental hyperthyroidism can be distinguished an "early" stage in which the pre existing carbohydrate of the food and of the deposits in the organism is oxidised When all the glycogen has been removed from the liver a "later" stage sets in in which there is in addition a formation carbohydrate thus formed The "later" stage is characterised by a marked rise in the CO_2 excretion and the O_2 absorption The action of the thyroid secretion on the glycogenic function of the liver lies thus at the root of the increased oxidation of proteins, carbohydrates, and probably also of fats produced by thyroid feeding —Experimental Observations on the Pituitary, by W Blair Bell This paper details the experiments on which Professor Blair Bell delivered a Hunterian lecture last year at the Royal College of Surgeons of England [1] The conclusions come to are as follows —

1 The pituitary body is an organ that is essential to life, its removal causes death within a few hours In the cases which survive for longer periods the removal has probably not been complete 2 The removal of very large portions of the pars anterior is incompatible with life It appears certain from the evidence at our disposal that it is the loss of this portion of the organ that proves fatal when total extirpation of the pituitary is practised 3 Partial removal of the pars anterior may, if sufficient quantity be removed cause genital atrophy This may occur in the absence of any other symptom, although the animal may remain undersized 4 Neither partial nor complete removal of the pars posterior causes any symptom The genital organs remain normal after operation, and young animals continue to develop Hence the secretion of the pars nervosa is neither necessarily beneficial nor essential to life 5 Partial removal of the partes anterior and posterior causes no symptom provided only a small portion of the pars anterior be removed 6 Clamping and separation of the infundibular stalk, by interfering with the blood supply and so causing degeneration in the cells of the pars anterior and intermedia, lead to the condition known as dystrophia adiposo genitalis 7 Artificial tumours in the neighbourhood of the sella turcica may produce irritation, which is accompanied by glycosuria and emaciation, or by interfering with the blood supply may lead to degenerative changes in the cells of the pars anterior, and so give rise to the syndrome dystrophia adiposo-genitalis 8 The pituitary body appears to be one organ, not two, and the essential and beneficial secretion is taken up by the blood stream, as in the case of the other organs of internal secretion

Physiological Abstracts —Issued by the Physiological Society and edited by Professor W D HALLIBURTON Vol II, No 6 September, 1917 London H K Lewis and Co Annual subscription, 25s —The standard of the Physiological Abstracts is well maintained in the September number of that publication, which contains more than 300 abstracts The section devoted to plant physiology forms a considerable and apparently an increasing proportion of the total abstracts, and is particularly valuable to physiologists, who are liable to overlook work done in this field of research There can be no doubt that, as time passes, the value of these abstracts is becoming more and more appreciated, they are especially useful at present when workers have so little leisure to devote to the reading of papers

The British Journal of Surgery Vol IV Bristol John Wright and Sons, Limited Price 30s net —The fourth volume of the *British Journal of Surgery*, under the direction of an editorial committee, of which Sir Berkeley Moynihan is chairman and Major E W Hey Groves secretary, maintains its high standard of excellence Biographical notices with good portraits are given of Sir Charles Ball, Mr Arthur Barker, and Sir Victor Horsley, as well as of two surgical worthies of an older generation, John Woodall and Peter Lowe Sir Alfred Keogh contributes an introductory article on the surgical organisation of the war Accounts are given of the surgical practice of other countries American, by Dr G W

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[1] See THE LANCET, Feb 19th, 1916 p 420

Crile, Portuguese, by Dr A. H Bizarro, French, by Professor Tuffier The series of illustrations of war surgery by various writers, under the general editorship of Sir George Makins, is advanced another stage, and other groups of writers collaborate in large studies of tetanus and traumatic aneurysm Individual articles under the signatures of well-known experts cover most of the range of war surgery Reviews and notices of books occupy a score of pages A noteworthy feature of the volume is the abundant illustration, some of it in colour, which reflects great credit on the publishers

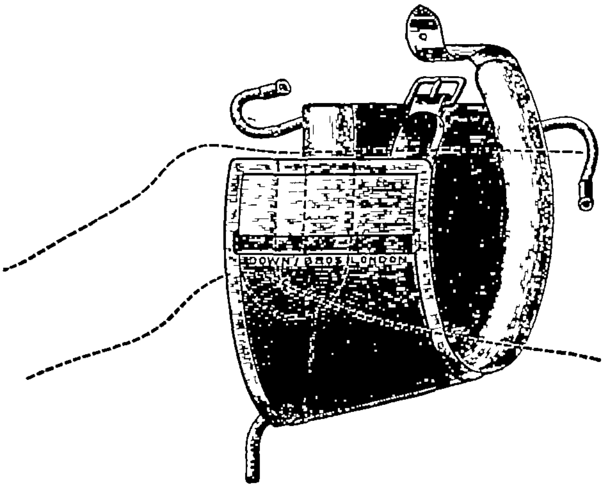
The Annals of Tropical Medicine and Parasitology Vol XI, No 1—The first contribution to this number of the *Annals* is by Dr J W S Macfie and Dr A. Ingram of the West African Medical Staff, the title being "Some Observations on Malaria in the Gold Coast Colony" where an unenviable reputation from the health point of view is disappearing under the considerable improvement in the health of its European officials Malaria, mostly of the subtertian variety, is very common The authors discuss the subject in its various aspects, including the relative frequency of the different malaria parasites, the seasonal incidence of the disease at Accra, the abnormal forms of parasites of the subtertian type, the association of malaria with œdema and the occurrence of anaplasma like bodies in the blood of patients suffering from malaria. This paper is illustrated by two plates and some smaller illustrations in the text—A second report on protozoal investigation of cases of dysentery conducted at the Liverpool School of Tropical Medicine is contributed by Mr Henry F Carter, F E S Dr Doris L. Mackinnon, Mr J B Matthews and Mr A. Malins Smith, Lieutenant-Colonel J W W Stephens, R.A.M C, collaborating in the last part of the report relating to the treatment of histolytic infections It appears that 20 men invalided from France were found to be carriers of *Entamœba histolytica*, 11 of these men had never been out of England before the war, one had been in Belgium, six had been in regions where amœbic dysentery is endemic either during the war or earlier, in the two remaining instances details were not obtained Four of the men had no history of dysentery and declared that they never had diarrhœa at any time, two who had no history of dysentery said that they had suffered from very bad diarrhœa in France for the first time in their lives, the other 14 all had a history of dysentery, 12 having contracted it in France Two men had dysentery before going to France and their attacks there were relapses, one of these had the disease first at Gallipoli, and the other in South Africa 12 years ago It is cases such as these last two that are responsible for introducing amœbic dysentery into the trenches in France although, no doubt, "non-dysenteric" carriers also play a part in the conveyance of the disease—The Occurrence of *Ankylostoma ceylanicum* in West African Dogs is dealt with by Dr Warrington Yorke and Dr B Blacklock, their paper being illustrated.—Dr J W S Macfie and Mr Henry Carter supply a joint paper on the Occurrence of *Spirochæta eurygyrata* in Europeans in England with a note on a second species of spirochæte from the human intestine.—The relapsing fever spirochætes are discussed by Dr J W S Macfie and Dr Warrington Yorke, who from their investigations find that there is no appreciable difference in length between the spirochætes causing European (*S recurrentis*) Indian (*S carteri*) and African (*S duttoni*) relapsing fever The spirochætes including double forms but not multiple individuals range in length from 12μ to 38μ, but are most commonly about 17μ to 20μ long These investigators were unable to discover any morphological distinctions between the spirochætes—A preliminary note on persons, who have never been out of Great Britain as carriers of *Entamœba histolytica* is contributed by Dr Warrington Yorke Mr Henry Carter Dr Doris L Mackinnon, Mr J R. Matthews and Mr A. Malins Smith recording the results of the examination for intestinal protozoa of 344 persons more than half of them being healthy young men who had recently entered the Army and were in training in a camp near Liverpool. Of these at least 10 (2·9 per cent) harboured in their fæces cysts morphologically indistinguishable from those of *E histolytica* By feeding experiments on kittens the cysts in one of these cases were proved to be pathogenic.—A joint article entitled 'Studies in the Treatment of Malaria is furnished by Lieutenant Colonel J W W Stephens R.A.M.C, Dr Warrington Yorke Dr B Blacklock Dr J W S Macfie, and Dr C Foster Cooper This paper, which is illustrated by numerous charts, discusses the intravenous injections of tartar emetic in various forms of malaria including double infections The conclusion arrived at is that intravenous injections of tartar emetic do not cause the disappearance from the peripheral blood of any stage of malarial parasites, whether *P vivax* or *P falciparum*, nor do the injections control either the rigors or the fever of acute malaria A second study in the treatment of malaria by the same authors as in the previous contribution, deals with intramuscular injections of quinine bihydrochloride in simple tertian malaria. As diverse views had been expressed as to the value of such injections, the authors carried out a series of observations, and as a result found that an intramuscular injection of quinine bihydrochloride, 15 grains in 2 c.c of water, on each of two consecutive days caused the cessation of febrile paroxysms of simple tertian malaria and effected the disappearance of all stages of the parasite from the cutaneous blood The action, however, is only temporary, a relapse occurring within two or three days The authors are careful to point out that this refers to simple tertian malaria only They propose to deal with malignant tertian malaria in a future paper As frontispiece to the number there is a very excellent photograph of Professor Mesnil, of Paris.

Parasitology, July, 1917, Vol IX, No 4—The present issue of this journal contains an interesting paper by N H Swellengrebel on "*Blastocystis hominis*," in which the writer states his reasons for disagreement with both Prowazek and Wenyon as to the status of these bodies. He considers that it is highly probable that "*Blastocystis*" is not the name of a zoological genus but of a peculiar form of degeneration to which representatives of several different genera of the intestinal protozoa may be liable In support of this contention he cites two cases, one that of a European who had resided for some years in the Dutch Indies and the other a Javanese temporarily resident in Europe, in whom he could definitely exclude both *Trichomonas* and *Chilomastix*. From the examinations of material in these cases he draws the conclusion that *Blastocystis* cannot, consequently be a normal developmental form of either of these flagellates Swellengrebel further states, in regard to other cases of *Blastocystis* infection which he had investigated that "no blastocysts were found without an associated parasite" Regarding Alexeieff's *Blastocystis enterocola* he considers that it is different from the forms described in man under the same name, as in no case was sporulation observed. This paper is important as marking a distinct advance in our knowledge of these peculiar bodies—T Goodey and A. W Wellings also contribute to this number an important paper on *Entamœba gingivalis* in which they contest the view advanced by Barrett and Smith, that this organism is the causative agent of pyorrhœa alveolaris They consider that the organism, "so far from being a destroyer of healthy tissues in the mouth, is in reality a devourer of waste nuclear material derived from disintegrated salivary corpuscles together with bacteria. and is therefore most probably a useful scavenger" The writers state that they have found *Entamœba gingivalis* to be present in the majority of cases of pyorrhœa, but not in all. They also found it in most cases of gingivitis *not* associated with alveolar absorption. In smears made from the healthy mouth of a child 2 years old the organism was found to be present Goodey and Wellings state as their general conclusions that "there is no evidence to prove that *E gingivalis* is the cause of disease."—T Goodey also contributes a paper on a new trichomonad flagellate *Tetratrichomonas buccalis* which he obtained in material removed from the lower incisors of one of the cases examined in connexion with the above paper This flagellate possesses four anterior flagella and no free posterior flagellum. In stained specimens its length is from 7-12μ. Both the above papers are supplied with excellent plates which illustrate the descriptions in the text—H. Scott furnishes this number with notes on the *Nycteribiidæ* and descriptions of two new genera and E. E Atkin and A. Bacot a paper on the Relation between the Hatching of the Eggs and the Development of the Larvæ of *Stegomyia fasciata* and the Presence of Bacteria and Yeasts Papers on Helminths are contributed by Sadao Yoshida 'Some Cestodes from Japanese Selachians" and K. I Skrjabin, "Sur quelques Nematodes des Oiseaux de la Russie"

New Inventions.

A BATH FOR THE TREATMENT OF COMPOUND FRACTURES OF THE FEMUR

THE difficulty of efficient bathing of septic compound fractures of the femur has been well manifested during the war In the hope of overcoming this and of procuring more rapid aseptic conditions I have had made a bath which can be used with Hey Groves's or the Balkan splint, or with a slightly wider Thomas's splint and a cradle The special features of this bath are as follows It may be employed for (*a*) the ordinary saline or antiseptic bath, (*b*) continuous irrigation, (*c*) Bier's treatment after the bath, (*d*) it may be removed without pain or alteration of the position of the bones or interfering with the extension, (*e*) or it may be left on during the course of treatment when it acts as a special support and splint to fractured bone The accompanying sketch shows the bath in use The bath is made of strong rubber with pneumatic tube at either end, shaped to fit the limb The pneumatic tubes or collars are inflated through a smaller tube provided with a tap, the upper of these may be used by means of an adjusting strap as a Bier's ring A tube conducts the solution from the bottom of the bath over the bedside for continuous irrigation, when an ordinary bath is required the tap provided is turned off The firm portion of metal and rubber offers excellent support for the limb, and in use the bath is very comfortable The malleable metal when covered with the bandage or towel and attached to the top of the splint, or cradle, resists the outward pressure of the pneumatic tube and so makes the bath water tight The removal of the bath is very simple, and performed without affecting the position of the limb



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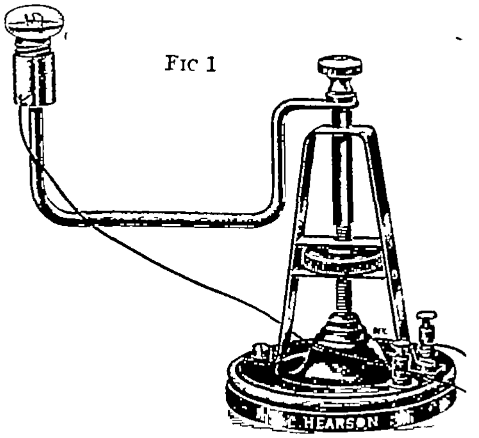
A SIMPLE LAMP FOR DARK GROUND ILLUMINATION

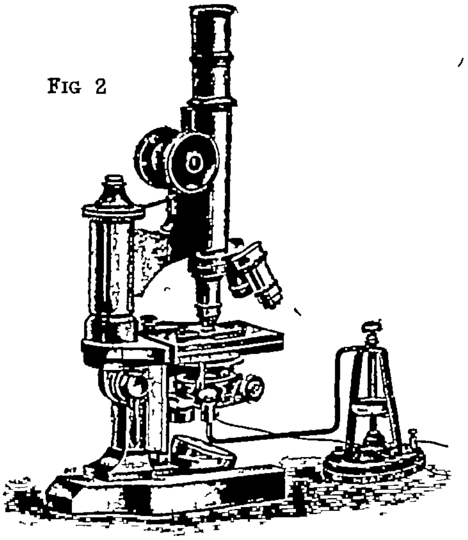
DARK GROUND illumination is invaluable to the early diagnosis of syphilis, but would probably have been more universally used if it had not required a comparatively strong source of illumination It can certainly be worked with such illuminants as an inverted mantle but the light and bull's eye have to be arranged very carefully and the average microscopist, more interested in rapid diagnosis than triumphs in optical skill has tended rather to neglect dark ground illumination where he could not command such an illuminant as an arc or a Nernst lamp To overcome this difficulty I was searching before the war commenced for a simple lamp which could be placed under the dark ground condenser and illuminate it without the intervention of a mirror At my request Mr N Clarke, of the Rochester Row Military Hospital, has worked out the mechanical details connected with the variable adjustment of the height of the lamp and the result is the arrangement illustrated. Although in its present form it will not demonstrate *Spirochæta pallida* satisfactorily with such paraboloidal condensers as the Zeiss, Reichert, Spencer lens, and Watson, it gives excellent results with dark ground condensers of the hemispherical type, such as the Leitz, Baker, and Swift. It is also a satisfactory illuminant for the examination of stained specimens

FIG 1



As shown (Fig 1), it consists of a small 4-volt bulb which is mounted on a stand, so that it can be raised or lowered by means of a milled wheel The lamp is run by a 4-volt accumulator or a dry cell, preferably the former It is set under the condenser (shown in Fig 2) and arranged so as to illuminate the centre of the field when the specimen is examined with a low objective The high powered objective is then turned on and the lamp raised or lowered by means of the milled wheel, so as to give the best illumination It may also be necessary to adjust the height of the condenser, lowering it very slightly to correct any haze The field is usually quite black and shows up spirochætes easily, it is not so dazzling as with stronger sources of illumination a point for which it may be preferred even by those who have electricity laid on and can use an arc lamp It was designed, however, for use where stronger forms of illumination than gas-light are not available

FIG 2



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THE LANCET.

LONDON SATURDAY SEPTEMBER 29, 1917

First Aid in Air Raids

THE dangers of air raids are known to all, and they are by no means small, even when no immediately fatal cases occur, but much of the risk is avoidable and is being avoided by the habit of taking immediate and adequate shelter It is not courage but only foolhardiness to court disaster in the open during the brief duration of an air raid, and such conduct endangers the lives of others, for it enhances the peril to the police and to the medical men, who are thus impeded in their work The dangers run by the whole community will be much lessened when every citizen makes a practice of taking as complete shelter as possible while the raid is progressing

The roll of fatalities in raids on the metropolis is statistically negligible when the population of Greater London is remembered, but prompt first aid to the wounded is of prime importance With a varying proportion of the injured the wounds will be of some severity, and, as recent records show, certain of these die not long after from the injuries they have received Many of those with wounds which lead to a fatal result might be saved if the bystanders knew what to do The authorities have arranged for medical and nursing aid to be brought soon to the injured, there is a corps of emergency surgeons who go on duty as soon as any notification of an air raid is received, and the hospitals are always ready to admit the wounded Yet all these arrangements, careful and elaborate though they may be, cannot be available until many minutes have elapsed after the infliction of the injury, and there is little doubt that lives could be saved if those near the injured could help immediately the need arises. A knowledge of first aid is now, indeed, widespread, but anyone who sees how the members of the public deal with a street accident must recognise that any kind of useful first aid is generally absent The knowledge acquired from classes on the subject is too often merely formal, and in the stress of an emergency yields to the aged and popular instinct to sit the sufferer up and give him brandy There are three conditions which more than any others call for immediate treatment One of these is hæmorrhage, and neglected it may rapidly prove fatal If it is in a limb it is a very simple matter to tie a handkerchief round the limb nearer the body and twist it tightly, a short stick, if available being used A victim in last Monday s raid is said to have saved his own life by so doing But simple as this course is it is not usually taken, and we think that medical men should take every opportunity of telling all their patients that to die of bleeding or to let a neighbour die of bleeding m[illegible] carelessness. If the bleeding is in the head or body this method cannot be used, and then the best treatment is firm digital pressure on the bleeding spot, but the uninitiated public cannot be expected to do good service in this way, save by giving every facility for the ministrations of more experienced persons Another danger arises from fire It is not at all rare in raids for the clothing to be set on fire, for some of the bombs are incendiary, and all should know that the speediest way to extinguish burning clothes is to wrap the sufferer in a coat, rug, or blanket, and so, by exclusion of the air, to put out the flames Nothing could be simpler, and yet how seldom is this method employed The third condition which calls for immediate treatment is impending asphyxiation. The fumes from the bombs may be the cause, or it may arise from the injuries received Be the cause what it may, the treatment required is, first, the removal from the mouth of any obstruction to breathing, and then the performance of artificial respiration Should no one present know how to carry this out, the simplest procedure is to dash cold water on to the patient's face, and this much knowledge should be in the possession of all, but we think the time has come when the heads of every household should understand the technique and rationale of artificial breathing

Our readers, of course, do not need these elementary instructions But when a little timely help is often of far greater value than aid which is delayed even for a quarter of an hour, we think that they might well impress upon the households which they visit, or their panel patients on suitable occasions, the value of acquiring such information. Everyone who can spare the time should learn first aid, and the aim of those who teach it should be not to endeavour to transform their pupils into surgeons by a few lectures and demonstrations, but to teach them to be ready to utilise those precious minutes which often elapse before a doctor can arrive on the scene Self possession and the application of the reasoning powers to the particular circumstances are essential to any knowledge of first aid, panic, whether violent or paralytic, is not only dangerous to the individual, but prevents him being of any service to his neighbours Every thinking citizen will subject himself to a course of mental as well as of physical drill to fit him for whatever may turn up in these strenuous times

Educational Hygiene

IN an address delivered last week before a meeting of teachers at Sheffield the President of the Board of Education noted the rapidly expanding interest taken in educational problems in every part of the kingdom The report, just appeared, of the Principal Medical Officer to the Board of Education is further evidence of this increasing interest In 1915 the staff of the School Medical Service had increased in number to some 1300 medical officers, 103 of whom were women and 88 whole time public

5789

servants, while nearly 1500 school nurses were at work, two thirds of them occupied during their whole time in the medical work of the schools At a time when doctors have been drafted from every possible source to meet the urgent claims of military service it was inevitable that these numbers should be substantially reduced, but it has nevertheless been generally admitted that no considerable economy could be made in the administration of the school medical service without serious risk of impairing the health of the present school child, and in so doing the future health of the nation s workers Recognising this by a stroke of genius the London County Council recently decided to reinstate its full staff of school doctors, so as to make it possible again to examine with care each entrant to school life Sir GEORGE NEWMAN records that during the year 1915–16 some five and a quarter million children were in average attendance at the public elementary schools of England and Wales, and that of this total nearly a million and a half were medically inspected during the year ending Dec 31st, 1916 Sad to say, the war was responsible for a decline of about 28 per cent in the number of children examined last year

Limitation of the medical staff proper has given occasion for an increasing coöperation among all agencies working for the physical betterment of school children Sir GEORGE NEWMAN alludes to the opportunities constantly arising in the teachers' life for considering the welfare of the children under their care Coöperation of teachers is at the present time a most important factor, and certain school medical officers have drawn up memoranda to assist head teachers in their districts in noting the indications for medical examination and treatment A change has been gradually coming over the duties of the school attendance officer The problem of school attendance has now become in the main a medical problem, other causes of truancy having practically vanished of recent years, and for the attendance officer there opens now the prospect of advising the mother of the school child on home treatment and the need for doctor or school clinic Only a woman health officer is fitted to do this, and she should no longer be expected to act as police court officer, nor should she bear the misleading appellation of sanitary inspector The sphere of usefulness for such officers, increased as it has been by war conditions, is not likely to diminish with the cessation of these special conditions In many districts voluntary children s care committees are in more or less active being, and it is in their effective work and coöperation with such agencies as the Invalid Children's Aid Association, the National Society for the Prevention of Cruelty to Children, the Children's Holiday Fund, and others that hope for the future lies The coördination of all such organisations to form an unbroken chain of medical supervision lasting from birth to adolescence is the ideal The neglect of systematic supervision has been largely responsible for the degree of physical disability to which medical recruiting boards have borne abundant testimony

Mr FISHER told us at Sheffield that one prominent lesson of the war is that the nation is rich enough and powerful enough to pay for anything that it really wants Judged by this standard the keenness of desire for an efficient school medical service might well be greater than in the year under review From 1913 to 1915 the yearly expenditure by local education authorities in respect of the work of the school medical service had increased from £286,000 to £411,000 In 1916 the increase was only 4 per cent on the previous year, although in fairness it should be added that during this year expenditure on education of mothers and infant welfare has largely increased The number of crêches set up by the Ministry of Munitions for the care of the children of married women employed in munition factories has now increased to 25, all of them drawing a grant of 75 per cent for initial provision and equipment, as well as a maintenance grant of 7*d* per head for each attendance, on the recommendation of the Board of Education An encouraging section of the report deals with open air education The open air school, Sir GEORGE NEWMAN writes, is a simple and economical way of applying a method of natural education to the susceptible body and mind of the children, and his remarks may be taken as a commentary on the proposal of the Education Bill, 1917, to found nursery schools The number of dull or backward children incapacitated by physical infirmity from deriving reasonable benefit from their schooling is estimated at 10 per cent, or a total of some 600,000 children, and for these is contemplated a combination of life in the open air with simple methods of tuition which might well be applied in the long run to all the children of tender age in the country The importance of the physical factors of ventilation, as distinct from mere chemical contamination of the air, long emphasised by Dr LEONARD HILL, has almost become a medical commonplace, but it has by no means obtained a firm hold in the practice of the elementary school. Dr HILL pleads with justice for ample open air school accommodation, not only for the debilitated and unhealthy children but for the normal child as well The gain will be seen not merely in the reduction in the cost of school buildings, a point doubtless appealing to local authorities, but in the reduced incidence of infectious disease and increased powers of resistance to them Miss MARGARET MCMILLAN S account[1] of her own adventure appears very opportunely In 1916 only 15 open air day schools were recognised by the regulations, affording accommodation for a mere handful of some 1000 scholars A few local authorities have provided in addition residential open air schools of recovery, but in these the accommodation does not amount to more than 400 or 500 places Mr FISHER S proposal for nursery schools will, if carried into effect, result in a gradual transformation of the infant department of the elementary school into a real open air nursery school, with an advantage to the youth of the nation which can hardly be exaggerated

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[1] The Camp School London George Allen and Unwin Price 3s 6d

Annotations.

"Ne quid nimis"

ATROPINE IN THE DIAGNOSIS OF TYPHOID INFECTIONS

We have received an interesting report, published by the Medical Research Committee of the National Health Insurance, giving the results of Captain H Fairley Marris's work on the effects of atropine upon the pulse rate of patients suffering from infections by the typhoid group of organisms—viz., *Bacillus typhosus* and *Bacillus paratyphosus A* and *B* A preliminary note has been published by Captain Marris,[1] and the present monograph gives a complete account of the test and of its results

The origin of the observations upon which the test is based was an investigation by Captain Marris of the bradycardia so commonly present in patients suffering from infections of the typhoid group In the course of this work he investigated the effect of atropine upon the slow pulse of these patients, giving a dose which in patients suffering from other conditions would cause a considerable increase in rate He found that in those with typhoid or paratyphoid fevers the pulse failed to respond to atropine by any definite increase in rate He also found that even with doses of 1/33 of a grain there were much less dryness of the mouth and dilatation of the pupil than would be produced in healthy persons by this dose In using this test Captain Marris has concentrated his attention upon the pulse-rate, owing to the fact that it is capable of exact measurement and therefore offers a mathematical basis for his test He satisfied himself after careful personal observations upon 200 suspected cases of these diseases that the atropine reaction could be employed for purposes of diagnosis, though unfortunately many of his records were destroyed in a fire occurring at the hospital in which they were carried out The routine method he now employs is to apply the test with the patient in the horizontal position and at complete rest *throughout*, and he recommends that it should not be done until at least an hour after the last meal The pulse is counted minute by minute till it is found to be steady, and usually ten minutes are recorded A dose of 1/33 grain of atropine sulphate is injected hypodermically, as a rule over the region of the triceps muscle After a period of 25 minutes the pulse is once more counted, minute by minute until it is clear that any rise which may have resulted from the injection has begun to pass off, for which purpose 15 or 20 minutes may be necessary The means of the readings before and of the readings at the maximum of the reaction after the atropine are compared, and if the difference between the two is 14 beats or less the test is regarded as positive and as indicating that the malady is one of the enteric group If a positive reaction occurs within the first 14 days of the disease the diagnosis may be regarded as established while if three negative reactions occur within the first fortnight the diagnosis of a typhoid or paratyphoid infection may be excluded with a considerable degree of certainty Cases admitted after the fourteenth day often give positive reactions but negative results after this period are often unreliable

In appraising the value of his reaction Captain Marris is careful to point out that his observations have been made upon members of the Expeditionary Force in France—that is, upon patients under unusual environment, and with their conditions modified by inoculation He indicates the need for investigation of this *reaction* in civilian patients before his results can be regarded as equally applicable to them In a series of his own cases 104 positive results were obtained in 111 first tests, and the test gave a correct report in 94 per cent. of the cases Captain Marris has investigated, as far as possible, certain other aspects of the atropine reaction in his research into its clinical value In six carriers of these infections he found in every case a negative result with the atropine test After inoculation with typhoid and paratyphoid vaccines in persons previously uninoculated, he obtained a positive result within two or three days, while previous to inoculation the reaction was negative It would appear that the reaction is of short duration, though this point requires further investigation, owing to the small number of cases so far examined Captain Marris gives certain reservations in regard to his test in addition to the one already referred to as to the value of negative reactions after the fourteenth day, thus he would be cautious in interpreting it in patients of 50 or over, especially in arterio sclerotic subjects Again, in patients with a pulse rate of 100 or over the conclusion from the test must be made with some caution If the response to atropine is negligible or the rate is lowered it may be regarded as positive, if, however, there is an increase of 8 or 10 beats per minute the test should be repeated In very severe cases it would appear that a negative reaction may occur Captain Marris concludes with some interesting suggestions as to the mechanism of the test, from which it would appear that he has supplied a convenient and easy test just when it was needed, as the problems of serological diagnosis have been complicated by protective inoculation It is to be hoped that his interesting monograph will be widely read and that it will stimulate research into this reaction in civilian patients and possibly lead to the discovery of similar reactions in other diseases

SACRO-ILIAC STRAIN

Professor William S Baer has called attention in the Bulletin of the Johns Hopkins Hospital to a lesion which the general practitioner often sees but fails to recognise, because it has been described only in recent years, mainly by American orthopædic surgeons Many have no doubt been wearied and even annoyed by patients who complain of pain—continuous and at times severe—in the small of the back or down the thigh It is attributed to rheumatism, sciatica, lumbago, pelvic disease, and other causes, and may defy the efforts of the general practitioner and the gynæcologist Many of these constant backaches—be they mild or severe, acute or chronic—are due to sprain or strain of the sacro iliac joint The term in use, sacro iliac synchondrosis, is a misnomer Recent investigations show that a true joint is present The articulating surfaces of the sacrum and ilium are covered by cartilage, and this by a thin layer of synovial membrane The motion allowed is small, owing to the configuration of the joint surfaces and the tightness of the ligaments The amount varies under different conditions and is greatest at the time of parturition, when it plays an important rôle in the mechanism of labour The strain on the joint is great, carrying as it does the trunk and upper limbs When the angle at which the joint is placed and the weight carried are considered, it is not surprising that strain is common This takes two forms according as the sacrum swings backward or forward on the axis of its third segment The former is the more important because of the severity of the symptoms It may be due to difficult labour direct injury such as a blow, or indirect injury in the form of severe muscular strain The pain may be so slight as to be merely a lumbar or gluteal ache on one side or so severe as to prevent walking and even lying down The sciatic nerve passes down directly in front of the sacro iliac joint, and according to the part pulled upon—sciatic, lesser sciatic, or servants, while nearly 1500 school nurses were at work, two thirds of them occupied during their whole time in the medical work of the schools At a time when doctors have been drafted from every possible source to meet the urgent claims of military service it was inevitable that these numbers should be substantially reduced, but it has nevertheless been generally admitted that no considerable economy could be made in the administration of the school medical service without serious risk of impairing the health of the present school child, and in so doing the future health of the nation s workers Recognising this by a stroke of genius the London County Council recently decided to reinstate its full staff of school doctors, so as to make it possible again to examine with care each entrant to school life Sir GEORGE NEWMAN records that during the year 1915–16 some five and a quarter million children were in average attendance at the public elementary schools of England and Wales, and that of this total nearly a million and a half were medically inspected during the year ending Dec 31st, 1916 Sad to say, the war was responsible for a decline of about 28 per cent in the number of children examined last year

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[1] Brit Med Jour Nov 25th 1915.

Limitation of the medical staff proper has given occasion for an increasing coöperation among all agencies working for the physical betterment of school children Sir GEORGE NEWMAN alludes to the opportunities constantly arising in the teachers' life for considering the welfare of the children under their care Coöperation of teachers is at the present time a most important factor, and certain school medical officers have drawn up memoranda to assist head teachers in their districts in noting the indications for medical examination and treatment A change has been gradually coming over the duties of the school attendance officer The problem of school attendance has now become in the main a medical problem, other causes of truancy having practically vanished of recent years, and for the attendance officer there opens now the prospect of advising the mother of the school child on home treatment and the need for doctor or school clinic Only a woman health officer is fitted to do this, and she should no longer be expected to act as police court officer, nor should she bear the misleading appellation of sanitary inspector The sphere of usefulness for such officers, increased as it has been by war conditions, is not likely to diminish with the cessation of these special conditions In many districts voluntary children's care committees are in more or less active being, and it is in their effective work and coöperation with such agencies as the Invalid Children's Aid Association, the National Society for the Prevention of Cruelty to Children, the Children's Holiday Fund, and others that hope for the future lies The coördination of all such organisations to form an unbroken chain of medical supervision lasting from birth to adolescence is the ideal The neglect of systematic supervision has been largely responsible for the degree of physical disability to which medical recruiting boards have borne abundant testimony

Mr FISHER told us at Sheffield that one prominen lesson of the war is that the nation is rich enough and powerful enough to pay for anything that i really wants Judged by this standard the keenness of desire for an efficient school medical servic might well be greater than in the year under review From 1913 to 1915 the yearly expenditure by local education authorities in respec of the work of the school medical servic had increased from £286,000 to £411,000 In 1916 the increase was only 4 per cent on the previous year, although in fairness it should be added that during this year expenditure on education of mothers and infant welfare has largely increased The number of crèches set up by the Ministry of Munitions for the care of the children of married women employed in munition factories has now increased to 25, all of them drawing a grant of 75 per cent for initial provision and equipment, as well as a maintenance grant of 7*d* per head for each attendance, on the recommendation of the Board of Education An encouraging section of the report deals with open air education The open air school, Sir GEORGE NEWMAN writes, is a simple and economical way of applying a method of natural education to the susceptible body and mind of the children, and his remarks may be taken as a commentary on the proposal of the Education Bill, 1917, to found nursery schools The number of dull or backward children incapacitated by physical infirmity from deriving reasonable benefit from their schooling is estimated at 10 per cent, or a total of some 600,000 children, and for these is contemplated a combination of life in the open air with simple methods of tuition which might well be applied in the long run to all the children of tender age in the country The importance of the physical factors of ventilation, as distinct from mere chemical contamination of the air, long emphasised by Dr LEONARD HILL, has almost become a medical commonplace, but it has by no means obtained a firm hold in the practice of the elementary school Dr HILL pleads with justice for ample open air school accommodation, not only for the debilitated and unhealthy children but for the normal child as well The gain will be seen not merely in the reduction in the cost of school buildings, a point doubtless appealing to local authorities, but in the reduced incidence of infectious disease and increased powers of resistance to them Miss MARGARET MCMILLAN S account[1] of her own adventure appears very opportunely In 1916 only 15 open air day schools were recognised by the regulations, affording accommodation for a mere handful of some 1000 scholars A few local authorities have provided in addition residential open air schools of recovery, but in these the accommodation does not amount to more than 400 or 500 places Mr FISHER'S proposal for nursery schools will, if carried into effect, result in a gradual transformation of the infant department of the elementary school into a real open air nursery school, with an advantage to the youth of the nation which can hardly be exaggerated

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[1] The Camp School London George Allen and Unwin Price 3s 6d

Annotations.

"Ne quid nimis."

ATROPINE IN THE DIAGNOSIS OF TYPHOID INFECTIONS

WE have received an interesting report, published by the Medical Research Committee of the National Health Insurance, giving the results of Captain H. Fairley Marris's work on the effects of atropine upon the pulse rate of patients suffering from infections by the typhoid group of organisms—viz., *Bacillus typhosus* and *Bacillus paratyphosus A* and *B*. A preliminary note has been published by Captain Marris,[1] and the present monograph gives a complete account of the test and of its results.

The origin of the observations upon which the test is based was an investigation by Captain Marris of the bradycardia so commonly present in patients suffering from infections of the typhoid group. In the course of this work he investigated the effect of atropine upon the slow pulse of these patients, giving a dose which in patients suffering from other conditions would cause a considerable increase in rate. He found that in those with typhoid or paratyphoid fevers the pulse failed to respond to atropine by any definite increase in rate. He also found that even with doses of 1/33 of a grain there were much less dryness of the mouth and dilatation of the pupil than would be produced in healthy persons by this dose. In using this test Captain Marris has concentrated his attention upon the pulse-rate, owing to the fact that it is capable of exact measurement and therefore offers a mathematical basis for his test. He satisfied himself after careful personal observations upon 200 suspected cases of these diseases that the atropine reaction could be employed for purposes of diagnosis, though unfortunately many of his records were destroyed in a fire occurring at the hospital in which they were carried out. The routine method he now employs is to apply the test with the patient in the horizontal position and at complete rest throughout and he recommends that it should not be done until at least an hour after the last meal. The pulse is counted minute by minute till it is found to be steady, and usually ten minutes are recorded. A dose of 1/33 grain of atropine sulphate is injected hypodermically, as a rule over the region of the triceps muscle. After a period of 25 minutes the pulse is once more counted, minute by minute until it is clear that any rise which may have resulted from the injection has begun to pass off, for which purpose 15 or 20 minutes may be necessary. The means of the readings before and of the readings at the maximum of the reaction after the atropine are compared, and if the difference between the two is 14 beats or less the test is regarded as positive and as indicating that the malady is one of the enteric group. If a positive reaction occurs within the first 14 days of the disease the diagnosis may be regarded as established, while if three negative reactions occur within the first fortnight the diagnosis of a typhoid or paratyphoid infection may be excluded with a considerable degree of certainty. Cases admitted after the fourteenth day often give positive reactions, but negative results after this period are often unreliable.

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Professor William S. Baer has called attention in the Bulletin of the Johns Hopkins Hospital to a lesion which the general practitioner often sees but fails to recognise, because it has been described only in recent years, mainly by American orthopædic surgeons. Many have no doubt been wearied and even annoyed by patients who complain of pain—continuous and at times severe—in the small of the back or down the thigh. It is attributed to rheumatism, sciatica, lumbago, pelvic disease, and other causes, and may defy the efforts of the general practitioner and the gynæcologist. Many of these constant backaches—be they mild or severe, acute or chronic—are due to sprain or strain of the sacro-iliac joint. The term in use, sacro iliac synchondrosis, is a misnomer. Recent investigations show that a true joint is present. The articulating surfaces of the sacrum and ilium are covered by cartilage, and this by a thin layer of synovial membrane. The motion allowed is small, owing to the configuration of the joint surfaces and the tightness of the ligaments. The amount varies under different conditions and is greatest at the time of parturition, when it plays an important rôle in the mechanism of labour. The strain on the joint is great, carrying as it does the trunk and upper limbs. When the angle at which the joint is placed and the weight carried are considered, it is not surprising that strain is common. This takes two forms, according as the sacrum swings backward or forward on the axis of its third segment. The former is the more important because of the severity of the symptoms. It may be due to difficult labour, direct injury such as a blow, or indirect injury in the form of severe muscular strain. The pain may be so slight as to be merely a lumbar or gluteal ache on one side or so severe as to prevent walking and even lying down. The sciatic nerve passes down directly in front of the sacro iliac joint, and according to the part pulled upon—sciatic, lesser sciatic, or sacral nerves—the pain is referred along the corresponding branches In most cases pain is produced on pressure over the joint Professor Baer finds also that pain is invariably present over what he calls "the sacro iliac point," a point "just to the side of and just below the umbilicus" This point is so often mistaken for McBurney's that many operations for appendicitis have been erroneously performed Another sign is the flat back or obliteration of the lumbar curve, due to tilting of the upper part of the sacrum backwards In unilateral cases there is generally deviation of the spine to the side opposite to the affected joint Kernig's sign is positive on the affected side, owing to spasm of the hamstring muscles, and its elicitation produces pain in the joint Treatment is simple and gives most satisfactory results In acute but mild cases great relief is afforded by strongly compressing the buttocks and applying strips of plaster across them from trochanter to trochanter In more chronic cases a belt encircling the pelvis must be worn In women the corset may be used as a support for a webbing pelvic belt, or a pad which presses on the sacrum may be incorporated into the corset In cases which resist these mild measures and in severe cases manipulation must be performed under anæsthesia The fully extended lower limb is flexed on the abdomen, causing the contracted hamstrings to pull on the ischial tuberosity and drag the top of the ilium backward to meet the sacrum This procedure is carried on until the hamstrings are thoroughly relaxed It will now be found that the normal lumbar curve has reappeared The position is maintained by a plaster splint extending from the nipple to the knee After ten days this is removed and a pelvic belt substituted Forward tilting of the sacrum is of different causation and occurs in girls who have outgrown their strength and in cases of visceroptosis The back is hollow, and the main principle of treatment is to relieve the weakened abdominal muscles by a suitable corset Massage and exercises should also be used

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[1] Brit. Med. Jour., Nov. 25th, 1916.

A STATE-AIDED MIDWIFERY SERVICE IN ENGLAND AND WALES

THE memorandum put forward by the Association for Promoting the Training and Supply of Midwives, which we briefly noticed in THE LANCET of Sept 8th, continues to claim attention, and a correspondent comments on some of the main aspects of the problem of a State aided midwifery service The greatest need in maternity and infant welfare is to secure an efficient service in all parts of the country, so that the women in the poorest and often most congested districts shall not be left with inefficient attendance At the present time it is left to chance or to private beneficence or to various associations to make the best of the existing deficiencies A relatively small proportion of the women training as midwives ever practise, and the reason of this is that in present conditions it is very difficult to make an adequate livelihood, the fees they obtain from patients being too small It is suggested that a proper fee for a midwife attending a confinement should be at least 20s to 25s, according to the services rendered The requisite sum required for providing these fees should be paid by the Exchequer and not be left to be provided by local rates It is not considered desirable that attempts should be made to recover from the patient any charge for the services rendered under the new scheme, and in any event the fee of the midwife should not be dependent on the sum recovered from the patient For such a scheme to be effective it is necessary that the money should be disbursed by the same body as is responsible for the inspection of midwives under the Midwives Act It is suggested that the county borough council and the county council should administer these services, and the scheme must be conditional on great improvements being effected in the inspection of midwives in all parts of the country It is further proposed that the guaranteed fee should be available also for any doctor who undertakes to give and does actually give the proper attendance and services at the confinement In the event of midwives being compelled to summon a doctor to a case the fees should be payable out of the same fund The whole scheme would entail an estimated expenditure of nearly £100,000 per annum This sum would enable an efficient midwifery service to be given to every confinement in England and Wales in which the income is below the suggested £160 limit The proposal that the conditions could be met by an increase in the amount of the maternity benefits or by the allowance of a cash payment to the mothers is not approved because this does not ensure the provision of efficient services. The scheme, as it runs, would, however, secure that the whole of the money allowed by the Exchequer is expended directly on the provision of services that immediately affect the welfare of the mother and her infant No one will deny that adequate midwifery attendance is essential to the well being of the community, and the fact that some 70–75 per cent of all births are attended by midwives renders this matter one of national importance At the present time there is still a large number of untrained midwives on the Register who were in practice before the passing of the Midwives Act, but it is disappointing to find how small a number of the women who qualify as midwives actually enter into practice. The reason is the very simple one already called attention to—viz, that an adequate living cannot be made in present conditions The work is very arduous and badly paid In these circumstances the proposals advocated by Dr. E W Hope in the above scheme have much to recommend them, and we are of opinion, if the poor throughout the country, and particularly in the poorer districts, are ever to secure a really reliable midwifery service, that some such State aided scheme is a necessity

LUMBAR PUNCTURE AS A CURE FOR CERTAIN FORMS OF IDIOPATHIC HEADACHE

Dr G Mingazzini, professor of neurology in the University of Rome, has published 47 cases of persistent headache treated by lumbar puncture[1] Before Quincke introduced his method of lumbar puncture cases had been recorded which showed that increase in the pressure of the cerebro spinal fluid was the cause of inveterate headache, relief having followed an abundant discharge from the nose or ear, while Oppenheim noticed in a patient suffering from such attacks an optic neuritis with paracentral scotoma It seems therefore probable that there are oscillations in the quantity of blood and cerebral blood pressure in relation with the functions of the brain Physiologically such varia tions are impeded by the hardness of the skull, and especially by the cerebro spinal fluid, and there is therefore a reciprocity between the amount of blood and that of the fluid which causes variations of pressure in the latter The favourable results obtained from lumbar puncture by Salmon in the treatment of intense headache accompanied by disturbance of vision induced Professor Mingazzini to apply this method to those forms of permanent headache which are so frequent, especially in young women

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[1] Il Policlinico Medical Section July 1st, 1917

The patients, six men and 41 women, were kept under observation for several months, some even for two or three years They were all selected, uncomplicated cases, care being taken to eliminate any suspected of syphilis or tubercle, chronic nephritis, or intoxication by tobacco or alcohol, epilepsy or incipient tumour, a searching examination of the fundus oculi being insisted upon in every instance The results of analysis of the fluid were invariably normal, all trace of globulin being absent, lymphocytes were either not present or did not exceed 2-3 while the albumin was in normal quantity as shown by Nissl's test In almost all the patients there was a distinct increase of the headache after the puncture sometimes lasting 8-10 days, rarely the pain disappeared immediately after puncture, while in one case only was there first a remission and then an exacerbation The results of the puncture were not always the same a definite cure was obtained in 24 about half the cases, a distinct improvement in 15 in whom the pain was so mitigated as to be more than bearable or returned after a long interval In 8 cases no benefit was obtained The result, favourable or otherwise, did not seem to depend on the age of the patient at the time, thus in one woman, aged 60 years, who had been subject from her youth to frequent attacks of headache, which for about six months had become of daily occurrence a definite cure was obtained from a single puncture, while in another patient of 22 years who had suffered for two years from headache after typhoid fever, no benefit resulted In the unbenefited cases the pressure of the cerebro-spinal fluid was normal or low, whereas in those where there was improvement it was always high indicating that increased pressure must be considered as one of the indubitable factors of the complaint There seemed to be no connexion however, between the quantity of fluid drawn off and the result obtained, in fact, in several patients who got no relief as much as 15 to 30 c c were drawn off, whereas in some who were relieved or cured 10 or even 5 c c were sufficient

It might be thought that in cases where there was merely some improvement a complete cure would be obtained from a second puncture, but this only rarely happens, and some cases have derived no benefit even from repeated puncture The reason for these different results is by no means clear, but, as a general rule, it may be stated that when the first attacks have begun early in life and the headache has become permanent later on without appreciable cause, the result of puncture has been a cure, or at least an improvement No improvement, on the contrary, takes place in women in whom the headache had either been permanent from the beginning, or had commenced by attacks after the age of 20, and become permanent from debilitating causes, such as suckling or long illness, or else was associated with other neuroses, such as neuralgia of the fifth nerve polio encephalitis and epilepsy Those cases which improved after puncture had generally suffered from permanent headache for a few months, whereas in patients in whom no benefit resulted the headache had been permanent for more than a year Hence a permanent headache of long duration seems to be an element unfavourable for cure by puncture, but the changing of the headache from a paroxysmal to a permanent form, a commencement in the second decade of life without appreciable cause, and a duration of permanent headache for less than a year, represent elements favourable to the success of lumbar puncture

THE BIOLOGICAL ASPECTS OF WARFARE.

By HARRY CAMPBELL, M.D LOND, F.R C.P LOND,
PHYSICIAN TO THE WEST END HOSPITAL FOR NERVOUS DISEASES LONDON

II (*Concluded*) *

The Checks to the Operation of Might

IT will be observed that the checks on the operation of egoistic might which we have already considered are purely intra communal, their sole object being the integrity of the community In the earlier phases of human society they took no part in regulating the relations between separate communities—between family and family or between tribe and tribe The concern of each unit was its own welfare alone It did not in the least trouble itself about the welfare of other communities Consequently the principles which regulated the conduct of the members of any one community among themselves in no way governed their conduct towards other communities The code of morality within the community did not obtain between individual communities Rather was there a tendency for separate communities to regard one another with suspicion and animosity, so that incessant inter tribal warfare may be said to have been the normal condition during the tribal phase of man's history The more one tribe could injure its neighbours by murder, pillage, and the like the more did it aggrandise itself, just as the status of the young brave was raised as the number of scalps he could display increased In short, the sanction of conduct obtaining between separate communities was just that of might pure and simple But with the further development of society—with the establishment of nations having commercial relations with one another—agreements of some sort had to be entered into between them, and these international obligations have become more and more binding as civilisation has advanced.

Now it might be thought that with the growth of commercialism, and the increasingly intimate social relations between separate states rendered possible by the ever-growing facilities of intercourse and transit, those checks to the operation of the might sanction which obtain within, and secure the cohesion of individual states would in like manner gradually come to unite the nations of the world in one all embracing commonwealth, and that just as within the properly ordered state conduct is guided and conflicting interests—personal, social, political, religious—reconciled, on lines of justice and common sense, so also could, and should, international conduct be governed and international disputes be adjusted But this devoutly to-be-wished for consummation is not yet We have recently seen how a nation may in its dealings with other nations cast aside all moral restraints and revert to the same sanction of might as obtained between the most primitive human communities

There could be no greater contrast than that between the ethical standard prevailing within a State and that obtaining between States at war with one another In the one case the motto is, 'Let justice be done though the heavens fall', in the other justice is cast to the winds and the issues are to be decided by might alone In the one case so high is the value set on life that every opportunity is afforded even to the most atrocious murderer to prove that he is innocent, in the other wholesale slaughter by the most terrible means which the mind of man can devise is sanctioned. In the one case the sanctity of private property and of compacts is rigorously upheld by all the might and majesty of the law, in the other compacts are dishonoured and property destroyed or confiscated to the value of untold millions on the sole ground of military necessity All this is strangely primitive When the citizens of a well ordered State have a dispute over conflicting interests, private or social, they appeal to justice, and were anyone to suggest that the issue should be decided by personal combat his sanity would be suspected, but when a dispute arises between two nations and they fail to adjust it by argument it but rarely happens that they mutually agree—especially if the one be more powerful than the other—to submit to arbitration, they appeal instead—they revert—to the age old sanction of might.

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* Article I and the first part of Article II were published in THE LANCET of Sept. 15th (p 433) and Sept 22nd (p 4[illegible]) respectively

The Influence of Warfare in Moulding the Individual

In considering the effects of warfare on mankind we must distinguish between its educative effects, i e , its influence in moulding the individual, and its racial effects, i e , its influence in moulding the race As regards the latter, I have already endeavoured to show that, while primitive intertribal warfare operated eugenically by favouring a survival of superior types, modern warfare operates dysgenically by promoting the survival of inferior types But while modern warfare is thus *racially* harmful, *individually* warfare has always had some educational value, and it would be idle to shut our eyes to the fact It is remarkable that among primitive communities those which cultivate warfare are generally superior to those leading peaceful lives It may be argued that they become warlike because they are superior rather than the reverse Facts, however, tend to show that whether a community is warlike or peaceful depends mainly upon the conditions under which it lives , thus the nomadic career of the hunter and herdsman is favourable to the warlike spirit, while the life of "stationary" (as distinguished from "migratory") agriculture tends to be peaceful

There can be no doubt that military training has a beneficial influence, physical and mental, in moulding the individual Its good effect physically is shown in the rapid improvement in the physique of recruits after enlistment (At the outbreak of the present war there were far too many contracted chests and round shoulders in this country) Its value in the moulding of character is no less decided , above all, it teaches discipline and respect for authority, both of which are in danger of neglect in democratic communities It would be difficult to exaggerate the importance of discipline it is a prime essential to good citizenship, and it is as needful to the one sex as the other Every boy and every girl should from an early age come under its rigorous influence and be made to realise not only that it is an essential to right living, but also to individual happiness and success in life , and there is nothing better calculated to inculcate discipline than military training This, or something equivalent to it, should begin in early school life

So much for the good that can be got from training for war What about war itself? While realising that man has evolved through slaughter, and that every step in his long upward path has been stained with blood, I must confess that modern warfare seems to me as inane as it is horrible This wholesale slaughter and mutilation of one set of men by another set of men who have no personal quarrel with one another, who are not even personally known to one another, and who under different circumstances might have been knit together in closest fellowship, has for me no bright side This driving of thousands upon thousands of a nation's picked manhood to the shambles, this wanton carnage, to say nothing of the loss of productive energy and the colossal destruction of wealth, is, one feels instinctively, wrong the horror is only equalled by the inanity of it

But though actual war is detestable yet it must be confessed that indirectly it serves a useful purpose in that the fear of it leads a nation to exercise itself in the virile pursuit of arms and to hold itself in readiness to meet an enemy, while actual war rouses the community to put forth supreme efforts, and this striving to overcome a threatened or actual danger works beneficially and leads to the development of latent possibilities in a manner undreamt of in the easy going times of peace

Nothing but the call of actual war could have aroused our country to accomplish what it has accomplished since the July of 1914 What other impelling force could have induced us to increase our national expenditure tenfold, to liberate vast stores of unused energy, to transform the whole economic life of the people, to sacrifice by tens of thousands the flower of our manhood, as has been done since the declaration of the war? All which goes to show how great things a nation can accomplish once the necessary stimulus is forthcoming If only some equally effective stimulus could be found in times of peace, one which should impel to similar energetic action, not for the purpose of slaughter and destruction, but for the common good! What might not be accomplished if all the energy and ingenuity and self sacrifice which we have devoted to the prosecution of this war had been directed to the clearing out of the slums of our cities and to the providing for the toiling millions healthy, well appointed, and beautiful homes Our present experience should serve to bring forcibly before us the fact that we have it in our power to do all this and much more All that is needed is the proper organisation and distribution of our activities—*and the adequate stimulus* But how to get the stimulus is the difficulty I fear that nothing but a great external danger such as we are now facing is capable of supplying it Theoretically a great religious revival might suffice, but it would have to be one which concerned itself not so much with the attainment of a possible heaven in another world as with the removal of some of the evils suggestive of another place in this one

Strange as it may seem, and contrary as it may be to our predilections and *a priori* conceptions, the condition of peaceful ease in which we picture the lion lying down with the lamb is, from nature's point of view, far from the ideal. A community long lulled in a state of blissful ease is bound to deteriorate for all healthful life implies struggle Man needs to be roused from the apathy into which he so easily slips by difficulties to overcome, and there is no more arousing stimulus than the apprehension of danger

Few will deny that when the present world war burst upon us we had as a nation grown lax and inert through long years of ease and luxury, and that whatever may be said of the ultimate effect of the war on the other belligerents, the people of these islands and of the British Empire as a whole will be greatly benefited by it For not only has it tightened the bonds which unite the units of the Empire, but it has awakened undreamt of stores of dormant activity, and I go as far as to believe that the greater the difficulties we may still have to contend with—the tighter the corner in which we may find ourselves, the more we may be compelled to fight with our backs to the wall—the better will it be for us individually and for the Empire at large , for it is only through struggle, fierce and sustained, that an individual or a nation can realise itself to the full Struggle has been a necessary factor in evolution. It is the normal condition of every living thing save those degraded parasites which inhabit the interior of their host and pay the penalty of their parasitism by a corresponding degradation in structure and function , for it is a primal law of nature that once the need for struggle is removed degeneration sets in Hence one of the great social problems confronting man in the future will be how, without having recourse to war with all its horrors to counteract the enervating and degenerating effects of the ease and luxury which tend to be shared by a considerable section of every prosperous community In the perfect State the conditions would be such as to render such enervation impossible Every able-bodied person would be compelled to pull his full weight in the ship of State—to play his part in that healthful struggle which is essential to adequate development Pure parasitism which prevails all too widely among us would be debarred save in the case of the diseased and decrepid To sanction it is unjust to the individual, though he may not know it, and unjust to the State (In insisting upon struggle as essential to development individual and national, I do not, of course, mean that it should be so severe as to be paralysing No one would contend, e g that conditions of abject poverty can have any other than evil results)

If I am asked how a nation, once peace and prosperity are secured to it, is to be kept engaged in bracing struggle and prevented from lapsing into enervating ease, I reply that I have no panacea This desirable end can only come through enlightenment But while so many evils to be set right still remain within the body politic, while so many social questions of the gravest urgency press increasingly upon us while all Europe has to be rebuilded and its new world relations to be readjusted it is safe to say that it will be long years before we shall be in any danger of relapsing into dreamful ease and before that time comes the enlightenment may have come also Moreover

> Man is not man as yet.
> When all mankind alike is perfected
> Equal in full blown powers—then not till then
> begins man s general infancy

Means of Preventing Warfare

Whether the nations of the world will ever attain to sufficient wisdom to abandon warfare I forbear to prophesy One cannot but hope that with advancing knowledge and clearer vision war will tend to die out and that just as we in this country, after centuries of internecine fighting were finally welded into a united people, so all the nations of the earth will some day be united into one great commonwealth. We are living in great times. Vast regions of the world are being opened up and developed with stupendous zeal, the exuberant output of inventions, such as the telephone the automobile, the flying machine, and labour saving machinery of all kinds, is profoundly modifying the conditions of life, intercourse between nations is becoming more and more intimate, added to which men are gaining an ever deeper insight into the laws of life, the elemental facts of evolution, of heredity and of social science are beginning to make serious appeal to men's minds and must before long be accepted as axiomatic truths pregnant with meaning as regards human welfare. The time is not far distant when children will be taught these truths as they were once taught their catechism, so that they will become part and parcel of the common mental equipment, and when this stage of general enlightenment is reached nations, it may be hoped, will find other ways of settling their disputes than by an appeal to the barbaric sanction of might.

When the unhappy Malvolio complained of the darkness of his cell, the fool's taunt was, "There is no darkness but ignorance." It was Malvolio's entire ignorance of the true situation which led him to think that his mistress had lost her heart to him, and in like manner it was the darkness of ignorance which is responsible for the present European cataclysm, ignorance alike of the elemental principles of sociology and current European politics. Does anyone for one moment suppose that the masses of the Central Empires would have entered upon the present struggle so light-heartedly if they had understood the actual situation as the author of "J'Accuse" e.g. understands it? Or if they had realised that hundreds of thousands of their numbers were to be slaughtered and broken without any resultant advantage to the survivors? Again, was it not ignorance—tragic ignorance—on the part of their rulers which allowed them to force on the war? They miscalculated they displayed stupidity—they lacked *enlightenment*. Had they *known* the forces they were stirring up against themselves we may be quite sure they would not have been guilty of what must ever rank as one of the greatest crimes in history.

A factor which we may reasonably hope will tend to make wars less frequent is the growth of democracy. The trend of political development among the most enlightened nations is towards a moderate sane Socialism—a system of government which while giving individualism fair scope, shall tend to equalise the present social inequalities. The political power of the masses will then steadily increase, and provided they be properly educated they may safely be trusted to use their power wisely. And when the informed masses of the different nations are brought together through accredited leaders and are thus enabled to act coördinately they, realising how much they have to lose and how little to gain by warring against one another may be expected to insist that international disputes shall be adjusted on lines of justice and common sense.

Commercial competition constitutes an important cause of warfare, naturally each nation tends to do the best for itself commercially. Hence has arisen the pernicious system of tariffs by which each nation strives to encourage its own industries at the expense of those of other nations and this artificial bolstering up of home industries sets artificial boundaries between the nations and is a perennial source of jealousies frictions and quarrels. An infinite benefit would be conferred upon the world at large by a removal of these artificial barriers and by the adoption of free trade all round. Not only would this do away with the immense amount of delay and inconvenience necessitated by the collection of duties, not only would it facilitate international intercourse and liberate armies of officials engaged in unproductive labour for employment profitable to the State but most important of all it would remove what is perhaps the chief cause of warfare.

The establishment of a United States of Europe trading among themselves as do the United States of America without any harassing restrictions has surely been the dream of everyone who has thought seriously over the social future of the peoples of Europe. Under such a system each State should as far as possible be constituted with due regard to race history and popular vote, each should be allowed to govern itself in its own way without any unwise interruption of historical continuity or any undue breaking away from tradition and no State should arrogate to itself precedence over any other. The fighting force of each State should be no larger than would suffice for the maintenance of internal order, and all plant for the manufacture of weapons other than those needful for this purpose should be scrapped. There would thus be an end of artillery—light and heavy—quick firing guns, bombs, mines, and the like. The sole firearm remaining would be the rifle which being used for sport could not well be discarded. Needless to say that with these restrictions aerial and submarine warfare would die a natural death while warfare by sea and land, if it did occur, would be infinitely less disastrous than at present—though quite as efficacious. (I may remark by the way that aerial warfare bids fair to eliminate all other forms. What naval or military base could withstand the bombardment of 50,000 aeroplanes? Only subterranean chambers are safe from serious aerial attack.) Any breach of the covenant by a State, or any dispute between one State and another, should be referred to a supreme tribunal constituted of delegates from each State.

I am aware, of course, that at the present time such a scheme is purely visionary it is but a dream yet it is one that we may well strive to make a reality.

Postscript

Considerations of space have prevented me from dealing with many aspects of my subject. One of these relates to fear. Is it not wonderful that so many millions of men are capable of mustering sufficient courage to face the terrors of modern warfare? Courage is an asset of inestimable value.

> Cowards die many times before their deaths
> The valiant never taste of death but once

We as medical men are familiar with the pathophobiac who pays us periodical visits in order to be assured that there is nothing the matter with him and of the man who smilingly meets a lingering death from cancer of the larynx. One of the unhappy effects of modern warfare is that it tends to preserve the timid at the expense of the brave, thus lowering the racial level of courage. The brave man seeks out danger, the timid man avoids it, and there are many ways of evading dangerous service and of minimising risks.

The liability to fear may be so great as to be pathological. One of this temperament is apt to become the victim of morbid fears—fears having no adequate objective cause. Claustrophobia is such a fear. I am led to refer to it here because the conditions of modern trench warfare are specially calculated to call it forth and also because Dr. W. H. R. Rivers has recently related an interesting case of this disease in the pages of this journal.[1] My interest in claustrophobia was roused many years ago by a family of claustrophobiacs, and since then I have had the opportunity of studying several cases.

Those who display a constitutional morbid tendency to fear—the congenital phobiacs as we may term them—constitute a definite class of psychasthenics. What particular form their fear, or fears, shall take depends very largely upon chance circumstances, but claustrophobia, like the fear of the dark and other instinctive fears, tends to be inherited as such as I have several times observed. This morbid fear appears to be an exaggeration of a normal instinct—the dread of capture or of anything which interferes with bodily freedom. It will be remembered that one of Lear's wicked daughters, in her endeavour to outbid her sisters for the father's goodwill could think of no more precious possessions than "eyesight *space*, and *liberty*."

In the family referred to the father, several of the children, and some of the grandchildren have displayed well marked claustrophobic tendencies and I have satisfied myself that in each case the fear has arisen independently and that mutual suggestion has played no part in the pathogenesis. One of the sons has not travelled for 30 years in a train, another son at the age of 50 suddenly developed panic while travelling in the Tube and has had to give up that mode of travelling.

I would take this opportunity of advancing two propositions bearing upon the pathogenesis and treatment of psychasthenia.

1. The essential feature of all the phobias met with in psychasthenia, and indeed, of all forms of genuine psychasthenia is a congenitally defective mental temperament—an abnormality in the realm of feeling tone. How far this depends upon defective cerebral organisation (e.g. of the paleo-thalamus the probable centre of feeling tone) or how

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[1] THE LANCET 1917 ii p 237

far upon the composition of the blood plasma, need not now be considered

2 Mental temperament is inborn, and but little susceptible of being altered A person is born with a certain temperament for which he is no more responsible than for the shape of his nose, and this inborn temperament tends to remain fundamentally the same throughout life, resisting almost completely all attempts, educational or psycho-therapeutical, to modify it No doubt some of his emotional disposition can be modified by training—an artistic aptitude can be developed by constant exercise, a bad temper bettered by systematic control—yet the native temperament remains, fundamentally unchanged A person's temperament never in fact, undergoes a decided change except as the result of the normal cyclical changes, such as puberty and senility, or in consequence of disease, such as Graves's disease, myxœdema, or actual insanity We meet a man we have not seen for years, and when we come to speak to him it is as if we were carrying on a conversation of yesterday, so conscious are we of his unaltered temperament, and it is this which constitutes the essence of the man, or, as we say, his personality There are the same old gestures, the same old tricks of speech, the same old play of facial expression, all indicative of the same temperament Contact with the world, his successes, his failures, his troubles, have no doubt left their impress Youthful ardour may have been damped, the optimist may have lost some of his hopefulness, the shy man may have grown bolder, the genial man may have become somewhat soured, the cheery nature more subdued, but all such changes are on the surface only When we come to probe below the surface we shall find that the temperament remains fundamentally the same the very sensitive, the very shy, the very timid, the irrepressibly self confident, remain sensitive, shy, timid, self-confident to the end of the chapter

Now if the foregoing propositions are sound—if a congenitally morbid mental temperament constitutes the basis of classical psychasthenia, and if temperament is all but insusceptible of being changed—the limitations of psychotherapy in psychasthenia are apparent If we cannot alter feeling tone, strike at the foundation upon which the whole superstructure of psychasthenia is built up, we cannot cure the affection In my experience the congenital psychasthenic remains psychasthenic to the end. I am far from saying that psychic treatment is wholly useless for these patients Much can be done to establish a sane habit of thought and to discipline morbid feeling tone, even though this remains essentially the same

As to the legitimacy of the conclusions Dr Rivers draws from his case I am somewhat doubtful His patient, one judges from the description, appears to be a congenital psychasthenic with a bent towards claustrophobia. It is, of course, conceivable that but for the early claustrophobic incident the specific fear of closed spaces would never have displayed itself, but everything must have a beginning, and I judge that the experience with the dog happened to be the first opportunity for the display of the specific fear Thereafter it showed itself on several occasions, and I suggest that these later manifestations would have occurred even in the absence of the initial incident

My experience of claustrophobia leads me to doubt whether the mere resuscitation of a forgotten experience is capable of dispersing the fear May not the cure (?) in Dr Rivers's case be an instance of faith healing? Do we sufficiently realise the tremendous power of *absolute* belief? If we could convince a person that by jumping off the Monument in a particular way he would plane gently down and alight unhurt below, he would have no kind of hesitation in attempting the experiment Similarly, if we succeed in implanting the belief that the revival of a forgotten fearful experience will for ever prevent the recurrence of a similar fear, we shall go far to prevent its recurrence The crucial test would be to observe the effect of the revival without letting the patient know that a cure was expected from it

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SOCIETY FOR THE STUDY OF INEBRIETY —The seventh Norman Kerr lecture will be delivered by Major W McAdam Eccles, M S, M.B, F.R C S, R A M C (T), on Tuesday, Oct 9th, at 5 30 P M, in the Robert Barnes Hall, 1, Wimpole street, Cavendish square, London, W, on the subject of "War and Alcohol" The honorary secretary of the society is Dr T N Kelynack, 139, Harley street, W 1, to whom acceptances of invitations should be addressed

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Correspondence.

"Audi alteram partem"

THE PHYSIOLOGICAL AND ANTISEPT PROPERTIES OF FLAVINE

To the Editor of THE LANCET

SIR,—The tone of Dr C H Browning's letter in y issue of Sept 15th is an unfortunate one It seems to more an expression of his wounded feelings than argume against my findings

He congratulates himself that in his second paper flavine, which appeared in the *British Medical Journal* July 21st last, he forestalled me in a number of my expe ments. In this matter he may certainly congratulate himse as my article was in the hands of the censorship authoriti weeks before his paper appeared His experiments, howeve were not carried far enough In connexion with the to power of flavine on the leucocytes, he still used as t maximum time of exposure two hours, which is altogeth too short to bring out the full toxic effect on the leucocyte just as it fails to show the maximum bactericidal power his first paper he found that flavine 1 in 500 was the highe dilution which in 20 minutes caused marked inhibition phagocytosis In his second paper he states that two hours flavine 1 in 10,000 had little effect on t phagocytic power I have found that in five hours flavi 1 in 256,000 gives marked inhibition of phagocytosis, whi in 24 hours the leucocytes are completely destroyed by 1 in 2,000,000 dilution

I have shown in my article that a 1 in 2000 dilution flavine completely inhibits emigration of the leucocyte However, in a septic wound treated with flavine 1 in 10 there is still a more or less purulent exudate This capable of two explanations either the *in vitro* experime does not represent what happens in the body or the flavi does not come into contact with the leucocytes in t walls of the wound in sufficient strength to prevent the emigration As we shall see the latter is the more like explanation

Experiments cited in my paper show that the purule discharges from a wound are very potent in "quenching flavine The bared surfaces of the wound also have a gre affinity for flavine. The following observation illustrate this point A patient had a cup-shaped wound in the fro of his leg following a fracture of the tibia. This depressio was about 2 × 1, × 1 cm and held about 1½ c c. of fluid was lined with granulation tissue The hole was carefull swabbed out and washed with normal saline solution unti the washings were clear In the next two hours it had fo changes of flavine (1 in 1000) and then it was filled wit flavine (1 in 1000) which was allowed to remain for tw hours, after which it was removed The strength of th flavine removed as measured by the colour intensity wa 1 in 3500 We see, then, that the granulation tissue-wall of this wound extracted in two hours most of the flavi from the solution applied, and that even after the had been well dyed with four changes of 1 in 1000 flavi during the previous two hours

The same wound, immediately after I had removed the above mentioned two-hour sample of flavine, was filled with a fresh supply of flavine 1 in 1000 and left for 15 hours. A the end of that time the walls of the wound were covered with a mucous like coating which I take to be the same that the distinguished surgeon (name unknown) has commended as "coagulated lymph" On examination this appeared to consist almost entirely of disintegrated leucocytes, a finding quite in keeping with the test-tube experiments on the powerful leucocidal action of flavine

The original instructions sent out with flavine by the Medical Research Committee, and presumably drawn up b Dr Browning, stated that it might be employed in conjunction with any of the various techniques recently advocated in wound treatment In his second paper on flavine Dr Browning mentions that unsatisfactory results have followed the two-hourly flushing with flavine after the method of Carrel, and he recommends that it be applied on gauze and only the minimum of water should be introduced so that the discharges of the wound might not be unduly diluted, as the antiseptic acts better in a serous medium Here as elsewhere Dr Browning seems to assume that in a septic wound the discharge consists only of serum and bacteria In connexion with the application of flavine on gauze it is of some interest to note the quenching effect of ordinary surgical gauze on flavine A piece of gauze was taken measuring 11 × 9 centimetres, 16-ply thick, and weighing 5 grammes This was placed in a small dish and 20 c c of flavine 1 in 1000, was poured on The gauze was kneaded for a few seconds to distribute the fluid in its interstices and then 12 c c. of fluid was squeezed out The colour of this corresponded with a 1 in 5000 dilution of flavine The fluid was poured back on the gauze and left two hours, after which on being expressed, it gave a colour corresponding with flavine 1 in 10 000 A similar experiment was done with flavine 1 in 4000 (using the same weight of gauze and the same volume of fluid), and after being in contact with the gauze for five minutes the expressed fluid corresponded in colour to flavine 1 in 128 000 These observations show clearly that the gauze dressing has a very powerful affinity for flavine, and that if gauze is wetted with a solution of flavine and applied to a wound the concentration of the dye which comes out of the gauze is very much less than that which went in Another very simple method of demonstrating the great affinity of cotton tissues for flavine is to half fill a small test-tube with flavine 1 in 1000 and to press down slowly into it a tight-fitting cotton wool plug The first fluid which exudes above the cotton wool will have absolutely none of the yellow colour of flavine. It may be done also by packing tightly a little wool or gauze into a piece of glass tubing and allowing a 1 in 1000 solution of flavine to percolate through it. The first fluid which comes through will have no yellow colour Using this method, and packing a piece of gauze weighing 0 38 gm. into a tube of a calibre of 6 mm , from a solution of 1 in 1000 flavine 1 3 c c of colourless fluid percolated through before any trace of the yellow colour of flavine was noticed It may be that this action of gauze in reducing the effective concentration of flavine is the cause of the difference between the unsatisfactory results which have followed the application of flavine by irrigation after the method of Carrel and the more favourable results which have followed its application on gauze Dr Browning has stated that too frequent applications of flavine may lead to 'undesirable cumulative effects on the tissues locally," and in this way he explains the failure of flavine used by Carrel's method The absorptive action of the gauze would certainly seem to prevent this

Dr Browning states "It appeared to be a hard enough task to demand of an antiseptic that it should not be quenched in a serous medium,' and he appears to resent the suggestion that anything further should be asked of an antiseptic The production of an antiseptic the power of which is enhanced by serum is a very fine achievement, but in the case of flavine this seems to be more than counterbalanced by the ease with which the dye is absorbed by the walls of the wound, by the purulent discharges, and by the dressings

Dr Browning objects to my interpretation of the 'therapeutic coefficient' as a comparison of the toxicity of a substance to leucocytes with its toxicity to bacteria (acting in serum) Although there can be no doubt from the text of his original article that this was the sense in which he used the term, he insists that it should be applied only to the ratio between the concentration which inhibits phagocytosis by 50 per cent *acting for 20 minutes in 25 per cent serum* and the lethal concentration to bacteria *acting for 24 hours in 50 per cent serum* If the term is to be applied only in this limited sense then Browning's coefficient' would be an appropriate name, but 'therapeutic coefficient is altogether too ambitious and implies that the numeral arrived at has some real value in therapeutics

When I started working with flavine I hoped that I should be able to convince myself that at last we had a really efficient antiseptic for use in septic wounds and it was with great regret that I found my experimental results could lead me to no other conclusions than the unfavourable ones mentioned in my article

I am Sir, yours faithfully

ALEXANDER FLEMING

Sept [illegible]th 1917

PURULENT BRONCHITIS

ITS INFLUENZAL AND PNEUMOCOCCAL BACTERIOLOGY

To the Editor of THE LANCET

SIR,—I have read with considerable interest the article as above entitled by Captain Adolphe Abrahams Captain N F Hallows, Dr J W H Eyre, and Major H French in your issue of Sept 8th, nevertheless, in fairness to myself, I should like to have the opportunity of pointing out that their observations contain little that is new and not contained in my "Bacterial Diseases of Respiration"[1] Therein I pointed out (1) how atypical and unlike anything described in the standard text-books of medicine are the majority of cases of bacterial infections of the lower respiratory tract, and (2) how rare it was in my experience for cases of lobar pneumonia to have a sudden onset, or occur, as it were, spontaneously, but that, on the other hand, they were either due to an awakening of a dormant focus of infection in the lung, or to the rapid extension into the chest of an acute nasal or tracheal catarrh, especially when the *B influenzæ* is associated with the pneumococcus (pp 103, 104) I also pointed out (p 105) that

> The pneumonia supervening on an attack of so-called 'influenza this latter being much more frequently a pure pneumococcal or a combined pneumococcal and influenzal infection, is commonly regarded as a fresh superimposed infection by the pneumococcus this is an utterly erroneous view in the great majority of cases."

On the other hand, when there has been a dormant pneumococcal focus in the lung—parenthetically I may remark that needling of the lung has shown me that sometimes the pneumococcus and *B influenzæ* are associated at these foci—

> the factor which above all probably decides the lighting into virulence of the dormant pneumococcus is the incidence of a fresh infection by some other catarrhal micro-organism Chief among these is undoubtedly the *B influenzæ* and it is owing to this fact that an epidemic of influenza is nearly always attended by a greatly raised mortality due to acute pneumonia. At the same time, it must be admitted that a pure invasion of any part of the respiratory tract by the *B influenzæ* is comparatively rare there is nearly always some other associated microbe and this is usually the pneumococcus" (p 107)

The conclusion of the authors, and also of Lieutenant J A. B Hammond, Captain W Rolland, and Lieutenant T H G Shore,[2] that—

> "the primary invasion of the lung tissues is by the *B influenzæ* and that pneumococci present at the same time are at first of low virulence that the earlier symptoms seem to be attributable to a *B influenzæ* toxæmia and that exaltations of the virulence of the pneumococci by symbiotic growth with the *B influenzæ* would appear to follow"—

is therefore a misconception of the process and only a partial statement of the truth especially in view of the experiments I adduced (p 32) to show how potent is the effect of the presence of other bacterial toxins (pneumococcal, staphylococcal, streptococcal) upon the rate of multiplication of the *B influenzæ* At the same time, I am prepared to admit that the *B influenzæ* may be a potent factor in raising the virulence of the pneumococcus

I have been studying closely for nearly 15 years both the clinical aspects and bacteriology of the respiratory tract, and have been much struck by the gradual increase especially during the last four years in the severity of these bronchitic and pneumonic attacks and I can assure the authors that the condition they describe has not been confined to the Aldershot military area nor even to the military as apart from the civilian population I have had large experience of it in private practice and among the New Zealand troops at Codford and Hornchurch So certain was I that a culmination would be reached last winter that I strongly advised the D D M S , N Z E F in England that a special chest hospital should be established and predicted a very high rate of incidence among our troops at Codford which he subsequently informed me had been exceeded The mortality rate at Aldershot was I believe exceeded among the New Zealand troops at Codford The severe epidemics of pneumonia which have ravaged Guatemala city for years (p 104) have I am informed, a mortality rate of 40 per cent It is highly probable that the grouping together of large numbers of men in huts and marquees tends both to raise the rate of incidence and mortality rate, but, as I have stated, the condition freely existed before the war and has been quite common among the civilian population

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[1] Bacterial Diseases of Respiration and Vaccines in their Treatment 1913 H K Lewis

[2] THE LANCET July 1[illegible]th 1917 (p 44)

Hammond, Rolland and Shore[3] are also in error when they conclude that vaccine treatment is not likely to be of great benefit I have treated many score of cases with vaccines and have found them to be a sheet-anchor, but they should be used as early as possible and before the finer bronchioles are blocked with exudate Antiphlogistine I have found to increase the patient's comfort, especially if combined with the use of medicated steam Mustard plasters, repeated as often as necessary, also help

Three further points I should like to discuss (1) prophylaxis, (2) after treatment, and (3) assessment of the future military value of sufferers from this condition

As regards prophylaxis, this largely hinges upon the prior recognition of cases that have dormant foci in their lungs These foci are nearly always situated in an area limited internally by the nipple line, externally by the anterior axillary line, above by the fifth rib and below by the eighth rib They may usually be heard by means of the stethoscope on very deep respirations being taken, often they can only be elicited post-tussically, occasionally they can only be heard 8 to 16 hours after the administration of a dose of vaccine containing 100 million pneumococci and 200 million *B influenzæ* Prophylaxis in these cases is by means of a suitable vaccine, at weekly intervals beginning in September and January of each year the following doses should be given 100 millions, 250 millions 250 millions, 500 millions, 500 millions pneumococci and twice as many *B influenzæ* In individual cases these dosages may require modification

If prophylactic inoculation be employed it should be confined to those who have been shown to possess the foci I have described, and perhaps extended to those who are especially susceptible to bronchial and pulmonary infections This is rendered necessary by the varied nature of the inoculations which the allied forces already receive The general incidence rate may be much diminished, as I have been convinced by my experiences at Hornchurch, both among those who have infected foci and those who have not, by subjecting the whole camp, officers and men alike, to disinfection of the upper respiratory tract on each of three successive days by means of the chloramine or zinc sulphate atomiser, as at present employed in the case of meningococcus carriers

As regards after treatment, this also is by means of vaccine, and greater attention should be paid to the conditions of life under which these men have to live, in my experience only about 50 per cent ever become quite well again

Finally, as regards the future value of these cases as fighting units for some time every case of respiratory disease in the New Zealand Force passed sooner or later under my care, and in many instances I found myself placed in an awkward position In a certain percentage (about 10 per cent) there was not the least chance of the men ever becoming fit for active service again Do what I would I could not eradicate foci, and the first onset of wet and cold sufficed to stir them up into activity These men were boarded out of the force In a further percentage (30 to 40) the foci appeared to clear up under vaccine and other treatment, but this clearance was I feel sure, more apparent than real Pronounced malaise tachycardia and intermittence of the heart's action, neuritis, myalgia, and gastric disturbances were some of the sequelæ which may persist to a greater or less degree for many months Close observation of these men after graduated exercises is necessary to determine their future value to the Army The remainder made good recoveries but convalescence was nearly always slow, and subsequent training had to be carefully graduated

I am indebted to Lieutenant-Colonel D S Wylie, C M G, officer commanding No 1 New Zealand General Hospital, Brockenhurst, for his kind permission that these notes should receive publication

I am, Sir, yours faithfully,

R W Allen,

Captain N Z M.C No 1 New Zealand General Hospital Brockenhurst Hants

Sept 18th 1917

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[3] The Lancet July 14th 1917 (p 44)

PEPSIN *VERSUS* NECROSED TISSUE

To the Editor of The Lancet

Sir,—Nothing retards the healing of a wound so much as the presence of necrosed tissue This is removed normally, though with deplorable slowness, by the digestive (tryptic) action of the leucocytes, and I venture to propose a method which would be infinitely quicker than this I do not myself practise surgery, but I see a great many claims for injury under the Workmen's Compensation Act and otherwise, and I have repeatedly noticed how owing to the presence of a deep seated area of necrosed flesh or tendon, the disablement is prolonged and, in some cases, septicæmia results The number of such cases in the present war must be enormous When the area is near the surface the remedy is the knife, but this falls upon the just and the unjust Were it possible to confine the removal to the dead tissues the living remainder might improve the final result Many a deep seated and otherwise harmless bullet too, must be surrounded by dead flesh, which not only prevents the healing of the sinus but imperils the patient's life

Now the phenomenon of peptic ulcer proves that the gastric juice will digest tissue that is dead without involving that through which the blood still circulates, and I propose that the lesson should be applied to contused wounds of a few days' standing if a slough is suspected The best technique can only be evolved from experience, but I feel sure that excellent results will be obtained by the following methods In the case of a sinus leading perhaps to a bullet the wound is first thoroughly well syringed with boiled water, the patient, or his limb, is then placed so that the orifice of the sinus is uppermost and glycerine of pepsin is slowly and interruptedly injected either directly or through an elastic catheter or drainage tube, which is gradually withdrawn while still syringing The orifice is then sealed up with strapping covered with cotton wool, oiled silk, and a lightly applied bandage, and left for four hours, precautions being taken to prevent the temperature from falling At the end of this period digestion will have done its work, though possibly a repetition may be necessary The strapping is therefore removed and the sinus forcibly syringed out with boiled water In the case of superficial sloughs which may or may not enclose islets of still living flesh three or four thicknesses of unmedicated lint well soaked with glycerine of pepsin, or perhaps a mixture of pepsin and water are laid lightly over the part and covered up as before the dressing being renewed every four hours, after pouring water upon the wound from a height

I have never heard of this method of treatment nor do I find any reference to it in books, but, even if it have been already tried, the present war gives opportunities that never existed before, and I plead for a further trial I hope that those who put it to the test will find time to communicate their results to the journals

I am, Sir, yours faithfully,

Ralph W Leftwich M D, C M
M R C S

Ebury street S W Sept 24th 1917

The Apple in the Dietary —The Government Order restricting the importation of American and Canadian apples into this country is regrettable since the wholesomeness of the fruit is well recognised A partial fruit diet is consistent with a healthy action all along the line of the alimentary canal and one of the best fruits for the purpose is a sound apple. It is stated that if this order is not withdrawn there will be no apples obtainable as soon as the home supply is exhausted, which is about the end of November, and many people who enjoy eating an apple and find it a healthy auxiliary to their dietary will probably have to forgo these advantages While the apple possesses a limited nutritive value of direct importance, the peculiar dispensation of its acids salts, pectins, sugars, and tissue renders it a very wholesome adjunct to diet and one which undoubtedly contributes to healthy metabolism

The War

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Capt D E Scott, R A.M C attd Dublin Light Infantry
Capt C H L Rixon R A M C, attd Sherwood Foresters
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Capt A. Gaston R A.M C, attd South Staffordshire Regt
Capt F F Dunham, Canadian A M C

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The following additional casualties among the sons of medical men are reported —

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Capt O Thomas, Welsh Horse Yeomanry, died of cardiac failure, second son of the late Dr J L Thomas, of Southampton
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Attended to wounded whilst fire was at its hottest in an exposed position.

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THE SUBSTITUTION OF AMERICAN DOCTORS FOR CIVIL MEDICAL PRACTITIONERS IN MILITARY HOSPITALS

At the meeting of the Central Medical War Committee on Wednesday last this important subject was considered in connexion with a memorandum submitted by the chairman of the Committee The situation having been thus explained to the Committee and debated by them, it was decided that a representation should be made to the Director General of the Army Medical Service asking that the Committee should be consulted on all matters affecting civilian medical men The statement in the lay press that the process of substitution as far as it has gone was in accordance with the expressed wishes or views of the Central Medical War Committee was entirely erroneous

SWEATERS

We have received the following letter from Mr John Penoyre and feel sure that our readers will bring its contents before their patients and friends at all opportunities —

Are your good readers going to prove good friends to "Sweaters" again for this the fourth winter of the war? We have made a good start with 10 999 comforts sent me as the result of a summer knitting appeal The sweaters and other things have outgrown this garret so will your readers kindly address the sacks and parcels to me care of Sir Edward Ward D G V O 45, Horseferry road, S W 1 They will have heard all about Sir Edward's Central Pool of Comforts with its bases on every front, from which officers can draw direct for exactly what their men need Waste and delay are thus avoided but it is a point of honour for us all to keep these base depots well supplied throughout the winter I know all about the wool difficulty but we can but do our best and be of good cheer bearing in mind that this may be the last winter of the war

I have here at 8 King's Bench Walk, Temple, E C 4, plenty of easily knitted printed patterns of all comforts for any ladies who like to write for them They are, of course, free but it is considerate to enclose stamps to cover postage

THE RED CROSS EMBLEM —In order to prevent the improper use of the Red Cross emblem on privately-owned motor cars and other vehicles, a notice has been issued by the Secretary of the War Office stating that owners of all vehicles who desire to obtain permission to display the emblem must make application through the headquarters of the command by which their cars are employed The application will be forwarded to the War Office and the necessary permit issued if the car in question fulfils the following conditions (1) That it is used solely for the conveyance of sick and wounded soldiers, and (2) that it has been placed at the disposal of the military authorities for this purpose rate, but, as I have stated, the condition freely existed before the war and has been quite common among the civilian population

Hammond, Rolland and Shore[3] are also in error when they conclude that vaccine treatment is not likely to be of great benefit I have treated many score of cases with vaccines and have found them to be a sheet-anchor, but they should be used as early as possible and before the finer bronchioles are blocked with exudate Antiphlogistine I have found to increase the patient's comfort, especially if combined with the use of medicated steam Mustard plasters, repeated as often as necessary, also help

Three further points I should like to discuss (1) prophylaxis, (2) after treatment, and (3) assessment of the future military value of sufferers from this condition

As regards prophylaxis, this largely hinges upon the prior recognition of cases that have dormant foci in their lungs These foci are nearly always situated in an area limited internally by the nipple line, externally by the anterior axillary line, above by the fifth rib, and below by the eighth rib They may usually be heard by means of the stethoscope on very deep respirations being taken, often they can only be elicited post-tussically, occasionally they can only be heard 8 to 16 hours after the administration of a dose of vaccine containing 100 million pneumococci and 200 million *B influenzæ* Prophylaxis in these cases is by means of a suitable vaccine, at weekly intervals beginning in September and January of each year the following doses should be given 100 millions, 250 millions, 250 millions, 500 millions, 500 millions pneumococci and twice as many *B influenzæ* In individual cases these dosages may require modification

If prophylactic inoculation be employed it should be confined to those who have been shown to possess the foci I have described, and perhaps extended to those who are especially susceptible to bronchial and pulmonary infections This is rendered necessary by the varied nature of the inoculations which the allied forces already receive The general incidence rate may be much diminished, as I have been convinced by my experiences at Hornchurch, both among those who have infected foci and those who have not, by subjecting the whole camp, officers and men alike, to disinfection of the upper respiratory tract on each of three successive days by means of the chloramine or zinc sulphate atomiser, as at present employed in the case of meningococcus carriers

As regards after treatment, this also is by means of vaccine, and greater attention should be paid to the conditions of life under which these men have to live, in my experience only about 50 per cent ever become quite well again

Finally, as regards the future value of these cases as fighting units for some time every case of respiratory disease in the New Zealand Force passed sooner or later under my care, and in many instances I found myself placed in an awkward position In a certain percentage (about 10 per cent) there was not the least chance of the men ever becoming fit for active service again Do what I would I could not eradicate foci, and the first onset of wet and cold sufficed to stir them up into activity These men were boarded out of the force In a further percentage (30 to 40) the foci appeared to clear up under vaccine and other treatment, but this clearance was I feel sure, more apparent than real Pronounced malaise tachycardia and intermittence of the heart s action, neuritis, myalgia, and gastric disturbances were some of the sequelæ which may persist to a greater or less degree for many months Close observation of these men after graduated exercises is necessary to determine their future value to the Army The remainder made good recoveries but convalescence was nearly always slow, and subsequent training had to be carefully graduated

I am indebted to Lieutenant-Colonel D S Wylie, C M G, officer commanding No 1 New Zealand General Hospital, Brockenhurst for his kind permission that these notes should receive publication

I am, Sir, yours faithfully,

R W ALLEN

Captain N Z M C No 1 New Zealand General Hospital Brockenhurst Hants

Sept 18th 1917

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[3] THE LANCET July 14th 1917 (p 44)

PEPSIN *VERSUS* NECROSED TISSUE

To the Editor of THE LANCET

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Now the phenomenon of peptic ulcer proves that the gastric juice will digest tissue that is dead without involving that through which the blood still circulates, and I propose that the lesson should be applied to contused wounds of a few days' standing if a slough is suspected The best technique can only be evolved from experience, but I feel sure that excellent results will be obtained by the following methods In the case of a sinus leading perhaps to a bullet the wound is first thoroughly well syringed with boiled water, the patient, or his limb, is then placed so that the orifice of the sinus is uppermost and glycerine of pepsin is slowly and interruptedly injected either directly or through an elastic catheter or drainage tube, which is gradually withdrawn while still syringing The orifice is then sealed up with strapping covered with cotton wool, oiled silk and a lightly applied bandage, and left for four hours, precautions being taken to prevent the temperature from falling At the end of this period digestion will have done its work though possibly a repetition may be necessary The strapping is therefore removed and the sinus forcibly syringed out with boiled water In the case of superficial sloughs, which may or may not enclose islets of still living flesh three or four thicknesses of unmedicated lint well soaked with glycerine of pepsin or perhaps a mixture of pepsin and water are laid lightly over the part and covered up as before the dressing being renewed every four hours after pouring water upon the wound from a height

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THE RED CROSS EMBLEM —In order to prevent the improper use of the Red Cross emblem on privately owned motor cars and other vehicles a notice has been issued by the Secretary of the War Office stating that owners of all vehicles who desire to obtain permission to display the emblem must make application through the headquarters of the command by which their cars are employed The application will be forwarded to the War Office and the necessary permit issued if the car in question fulfils the following conditions (1) That it is used solely for the conveyance of sick and wounded soldiers, and (2) that it has been placed at the disposal of the military authorities for this purpose

URBAN VITAL STATISTICS

(Week ended Sept 22nd, 1917)

English and Welsh Towns —In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 11·1, against 11·1 and 10·6 per 1000 in the two preceding weeks In London, with a population exceeding 4,000 000 persons the death rate was also 11·1 per 1000 while among the remaining towns it ranged from 2·1 in Swindon, 3·1 in Reading and 4·0 in Cambridge to 17·9 in Wimbledon, 21·6 in Gateshead and 21·8 in Stockton-on Tees The principal epidemic diseases caused 470 deaths which corresponded to an annual rate of 1·4 per 1000 and included 344 from infantile diarrhœa, 39 from diphtheria 38 from whooping-cough 35 from measles, and 7 each from enteric fever and scarlet fever The deaths from diarrhœa, which had been 312, 320 and 262 in the three preceding weeks rose to 344 and included 90 in London 27 in Liverpool, 17 in Sheffield, 16 in Manchester and 12 each in Hull and Newcastle-on Tyne The 732 cases of scarlet fever and 1082 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 49 and 45 above the numbers remaining at the end of the previous week. Of the deaths in the 96 towns 107 resulted from violence The causes of 25 deaths were uncertified, of which 3 were registered in Liverpool and 3 in Bootle.

Scotch Towns —In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2 500 000 persons the annual rate of mortality was equal to 11·6 against 12·6 and 10·8 per 1000 in the two preceding weeks The 257 deaths in Glasgow corresponded to a rate of 12·0 per 1000 and included 24 from infantile diarrhœa 6 from whooping cough 3 from diphtheria and 1 each from measles and scarlet fever The 64 deaths in Edinburgh were equal to an annual rate of 10·1 per 1000 and included 2 each from whooping-cough and infantile diarrhœa, and 1 from diphtheria.

Irish Towns —The 127 deaths in Dublin corresponded to a rate of 16·6, or 1·6 per 1000 above that recorded in the previous week and included 9 from infantile diarrhœa, 2 from whooping-cough and 1 each from measles and diphtheria The 109 deaths in Belfast were equal to an annual rate of 14·5 per 1000 and included 7 from infantile diarrhœa, 2 from whooping cough, and 1 from enteric fever

VITAL STATISTICS OF LONDON DURING AUGUST 1917

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 3·1 per 1000 of the population estimated at 4 237,387 persons in the three preceding months the rates were 3·5 3·4 and 3·5 per 1000 respectively The lowest rates were recorded last month in Paddington Kensington, Fulham, St Marylebone, Holborn and Battersea and the highest rates in Finsbury Shoreditch, Bethnal Green Stepney Southwark Bermondsey and Greenwich The prevalence of scarlet fever was less than in any of the preceding months of this year this disease was proportionally most prevalent last month in Shoreditch Bethnal Green Stepney Bermondsey, Wandsworth, and Lewisham The Metropolitan Asylums Hospitals contained 616 scarlet fever patients at the end of last month against 613 595 and 644 at the end of the three preceding months the weekly admissions averaged 83 against 92, 83 and 101 in the three preceding months Diphtheria was considerably less prevalent than in any other recent month the greatest proportional prevalence of this disease last month was recorded in the City of London Finsbury Shoreditch Bethnal Green Stepney Southwark, Bermondsey, and Greenwich There were 1003 diphtheria patients under treatment in the Metropolitan Asylums Hospitals at the end of last month against 1048 1042, and 1070 at the end of the three preceding months the weekly admissions averaged 122, against 129 138 and 142 in the three preceding months The prevalence of enteric fever was below that recorded in either of the two preceding months this disease was proportionally most prevalent last month in Hammersmith Chelsea Stepney and Deptford The Metropolitan Asylums Hospitals contained 45 enteric patients at the end of last month against 31 and 41 at the end of the two preceding months; the weekly admissions during the month averaged 6 against 6 and 7 in the two preceding months Erysipelas was proportionally most prevalent in St Pancras Hackney Stoke Newington Shoreditch and Southwark The 19 cases of puerperal fever notified during the month included 3 each in Stepney and Wandsworth, and 2 each in Islington and Lewisham Of the 10 cases of cerebro-spinal meningitis 2 belonged to Battersea while the 4 cases of poliomyelitis belonged respectively to Fulham Chelsea, Poplar, and Battersea

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ending Sept 1st the deaths of 4261 London residents were registered, equal to an annual rate of 10·5 per 1000 of the population in the three preceding months the rates were 13·9 12·0 and 10·9 per 1000 respectively The death rates last month ranged from 4·7 in the City of London 7·8 in Woolwich, 8·1 in Wandsworth, 8·3 in Hampstead 8·5 in Hackney and 8·7 in Lewisham to 12·1 in Southwark 12·3 in Stepney 12·5 in Finsbury 13·1 in Chelsea, 14·2 in Shoreditch, and 15·1 in Bermondsey The 4261 deaths from all causes included 476 which were referred to the principal infectious diseases of these 59 resulted from measles, 8 from scarlet fever, 35 from diphtheria, 37 from whooping-cough, 15 from enteric fever, and 322 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London among the metropolitan boroughs they caused the lowest death rates in Chelsea, the City of Westminster St Marylebone Hampstead Holborn and Lewisham and the highest death rates in Shoreditch, Stepney, Poplar Bermondsey and Greenwich The 59 deaths from measles were 45 below the corrected average number in the corresponding period of the five preceding years this disease was proportionally most fatal last month in Kensington Hammersmith Islington Shoreditch Stepney and Poplar The 8 fatal cases of scarlet fever showed a decline of 11 from the corrected average number and included 2 in Southwark and 1 each in Paddington, St Pancras Hackney Lambeth Wandsworth, and Camberwell The 35 deaths from diphtheria were 2 fewer than the average the greatest proportional mortality from this disease occurred in the City of Westminster,

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING AUGUST 1917

(*Specially compiled for* THE LANCET)

CITIES AND BOROUGHS	Estimated civil population 1916	Notified Cases of Infectious Disease												Deaths from Principal Infectious Diseases									Deaths from all causes.	Death rate per 1000 living
		Small pox.	Scarlet fever	Diphtheria.*	Typhus fever	Enteric fever	Other continued fevers	Puerperal fever	Erysipelas	Cerebro-spinal meningitis	Poliomyelitis	Total	Annual rate per 1000 persons living	Small pox	Measles	Scarlet fever	Diphtheria.*	Whooping cough	Enteric fever	Diarrhœa and enteritis (under 2 years)	Total.*	Annual rate per 1000 persons living		
LONDON	4,237,387	—	423	581	—	42	1	19	163	10	4	1243	3·1	—	59	8	35	37	15	322	476	1·2	4261	10·5
West Districts																								
Paddington	130 668	—	8	10	—	2	—	—	5	—	—	25	2·0	—	2	1	—	1	—	5	9	0·7	140	11·2
Kensington	152,144	—	12	10	—	2	—	1	4	—	—	29	2·0	—	4	—	—	1	1	17	23	1·6	161	11·0
Hammersmith	117 965	—	6	17	—	5	—	—	1	—	—	29	2·6	—	3	—	—	1	1	7	12	1·1	128	11·3
Fulham	149 428	—	18	7	—	1	—	—	2	—	1	29	2·0	—	—	—	—	1	—	12	13	0·9	137	9·6
Chelsea ..	57 298	—	4	4	—	3	—	—	1	—	1	13	2·4	—	—	—	—	—	—	3	3	0·5	72	13·1
City of Westminster	132,853	—	8	21	—	1	—	1	7	—	—	38	3·0	—	—	—	4	—	1	2	7	0·5	117	9·2
North Districts																								
St Marylebone	98 673	—	3	9	—	1	—	—	5	—	—	18	1·9	—	1	—	1	1	—	1	4	0·4	99	10·5
Hampstead	81 470	—	—	17	—	—	—	—	1	—	—	18	2·3	—	—	—	—	—	—	1	1	0·1	65	8·3
St Pancras	196 812	—	16	33	—	2	—	1	11	—	—	63	3·3	—	1	1	2	2	1	9	16	0·8	191	10·1
Islington	309 359	—	38	41	—	3	—	2	14	—	—	98	3·3	—	10	—	1	4	—	17	32	1·1	310	10·5
Stoke Newington.	49 776	—	4	6	—	—	—	—	3	1	—	14	2·9	—	1	—	1	1	—	1	4	0·8	54	11·3
Hackney	209 636	—	19	10	—	3	—	—	12	—	—	44	2·2	—	1	1	—	5	1	19	27	1·3	171	8·5
Central Districts																								
Holborn	38 161	—	—	3	—	—	—	—	2	—	—	5	1·4	—	—	—	—	—	—	1	1	0·3	48	13·1
Finsbury	74 230	—	5	21	—	1	—	—	4	—	—	31	4·4	—	2	—	—	2	—	6	10	1·4	89	12·5
City of London	20 113	—	—	4	—	—	—	—	1	—	—	5	2·6	—	—	—	—	—	—	—	—	—	9	4·7
East Districts																								
Shoreditch	99 832	—	16	21	—	—	—	—	9	1	—	47	4·9	—	5	—	2	—	—	16	23	2·4	136	14·2
Bethnal Green	115 652	—	25	31	—	—	—	1	6	1	—	64	5·8	—	3	—	1	1	—	8	13	1·2	107	9·7
Stepney	258,395	—	37	53	—	5	—	3	11	1	—	110	4·4	—	8	—	4	3	1	39	55	2·2	304	12·3
Poplar	155 095	—	17	25	—	2	—	—	3	—	1	48	3·2	—	5	—	2	2	—	21	30	2·0	176	11·8
South Districts																								
Southwark	177 166	—	17	36	—	1	—	1	15	—	—	70	4·1	—	2	2	2	1	—	22	29	1·7	205	12·1
Bermondsey	113,661	—	17	26	—	1	—	—	5	1	—	50	4·6	—	—	—	—	1	2	26	29	2·7	165	15·1
Lambeth ..	283,729	—	27	33	—	—	—	1	8	1	—	70	2·6	—	2	1	5	—	—	15	23	0·8	295	10·8
Battersea ..	159 402	—	8	15	—	1	—	—	2	2	1	29	1·9	—	3	—	1	3	1	10	18	1·2	154	10·1
Wandsworth	310 858	—	45	30	—	4	1	3	9	1	—	93	3·1	—	2	1	2	1	1	10	17	0·6	241	8·1
Camberwell ..	249 749	—	25	25	—	—	—	1	6	1	—	58	2·4	—	—	1	1	3	—	13	18	0·8	239	10·0
Deptford	107 696	—	7	14	—	2	—	1	5	—	—	29	2·8	—	2	—	4	—	—	13	19	1·8	121	11·7
Greenwich	94 452	—	12	26	—	1	—	—	4	—	—	43	4·7	—	2	—	1	—	1	17	21	2·3	93	10·3
Lewisham ..	162,901	—	22	17	—	1	—	2	2	—	—	44	2·8	—	—	—	—	1	3	4	8	0·5	136	8·7
Woolwich	130 313	—	7	16	—	—	—	1	5	—	—	29	2·3	—	—	—	1	2	1	7	11	0·9	93	7·8
Port of London ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup

Shoreditch Stepney Poplar Southwark, Lambeth, and Deptford. The 37 fatal cases of whooping-cough were 20 below the corrected average the highest death rates from this disease were recorded in Islington, Hackney Finsbury Poplar Battersea, Camberwell and Woolwich The 15 deaths from enteric fever were 6 above the average and included 3 in Lewisham and 2 in Bermondsey The 322 deaths from diarrhoea and enteritis among children under 2 years of age were 132 below the corrected average the greatest proportional mortality from this cause was recorded in Kensington, Shoreditch, Stepney Poplar Southwark, Bermondsey and Greenwich. In conclusion it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 30 per cent below the average.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Staff-Surg P L. Crosbie to be Fleet Surgeon.

B. Maclean to be temporary Surgeon

The following appointments have been notified —Surgeon J G Bell to the *Skirmisher* Temporary Surgeons W A. Mein to the *Victory* A. W North to the *Cameronia* and H. R. Bickerton to the *Liverpool*

ARMY MEDICAL SERVICE.

Col. E. A. Burnside is retained on the Active List and to be supernumerary

Temp. Lieut -Col. A. S Woodward to be a Deputy Assistant Director-General (temporary).

Surg -Gen Sir Richard W Ford, K.C.M.G., C B., D.S O., is retained on the Active List and to be supernumerary

TERRITORIAL FORCE.

Surg Major W M. Taylor to be Deputy Assistant Director of Medical Services

ROYAL ARMY MEDICAL CORPS

Temp Capt. Sir Vincent Nash to be temporary Major

Temp Major F E. Crew Devon. Regiment T.F., to be temporary Major

Temp. Capt A. L. Jones, Canadian A.M C to be acting Major while specially employed.

Second Lieut (temp Capt.) F E Reynolds, Yeo. T F to be temporary Captain

Temp. Lieuts. to be temporary Captains L J Hood, W Lumsden, F Jubb N Leonard F G Chandler T A. Jones C T Galbraith M C

To be temporary Captains: E C A. Smith F W Hird F E. Daunt, G R.C Wilson, S G MacDonald, S Jacob W Russell, M.C., H. D Gasteen, W Bannerman S Oliver R. E. Walker

To be temporary Lieutenants E. F Wills, F M. Auld, H. Goodman T A. Ross J R McGregor L. W Forsyth H W James, T J Little, R. T Stoney E A. Bernard W D Sammon, O G Evans A. C Strain T J Lyons B R Billings, E S Ellis J F Liddell, E. L. Clay J C Drysdale C L. Birmingham H. B Ellison, H Galloway F W Emery J Brown, J N G W McMorris, N Garrard G G Macdonald, G S Banks, J P F Waters A. B. S Todd C M. Pennefather S A. Day A. Dixon, J E. Prytherch, D A. Tompsett J E Lucas, W C Fowler T E Evans F O B Ellison J M. S Wood, J T. Hill, C. Peacock J H Fenn, A. S Wilson J C Mead A. S Griffith, T F Pugh, A. C Sharp, J Lascelles C J A. Woodside H Widdas W B Wilson, J Brierley N V Milton A. S Morley W R. Bayne L. G Allan, R. B Kinloch C P Strong A. E. A Carver A. Mills E Macmillan A. Lowndes, P Montgomery I H Lipetz, T C D Cathcart W P Lowe C H. Pippmann E L. Holland.

To be temporary Honorary Lieutenants J W Hawthorne O H Stansfield T J Blacksheor A O Raymond, W H Braddock R Gellatly (whilst serving at Huddersfield War Hospital)

Officers relinquishing their commissions Temp Major J Neilson Temp Capts. W Barker (and is granted the honorary rank of Capt) G C Anglin R. Maclean E. J Tyrrell (on account of ill health contracted on active service) D A. Birrell (on account of ill health) J A R. Lee A. W Owen, T G Williams J Cassels Temp Lieut. J M Coplans (on account of ill health contracted on active service and is granted the honorary rank of Lieutenant)

SPECIAL RESERVE OF OFFICERS

To be Lieutenants R. R. Evans (from Manch. University Contingent O T C), J Marshall P A O Brien J J Robertson, R. P Crawford and W F Kirlichan (from Glasg University Contingent. O T C) D C Buchanan (late Lieut Res of Officers) J M. Savege.

TERRITORIAL FORCE.

Major (temp. Lieut -Col) A. Milne-Thomson, relinquishes the temporary rank on ceasing to command a Field Ambulance.

Capt (temp Major) R. Alderson to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

Capt. (acting Lieut.-Col.) A. C H McCulloch reverts to the temporary rank of Major on ceasing to command a Field Ambulance with precedence as from Jan. [illegible], 1915.

Capt. H. B Low M.C to be acting Lieutenant Colonel whilst commanding a Field Ambulance

Capt. (acting Lieut.-Col.) J S Manford relinquishes his acting rank on ceasing to command a Field Ambulance.

Capt A. B Prosser relinquishes his commission on account of ill health and is granted the honorary rank of Captain.

Capt. A H H [illegible]all D S O to be temporary Major and is seconded for service overseas

Capt A. E Woodcal, from the Unattached List, to be Captain.

To be Lieutenants J Dall, A. S Sykes.

A T Brand (late Surg Major 2nd V B East Yorks. Regiment) to be temporary Major in the East Yorkshire Medical Volunteer Corps

INDIAN SUBORDINATE MEDICAL DEPARTMENT

By Royal Warrant the honorary rank of Major has been granted to Senior Assistant Surgeons of the Indian Subordinate Medical Department on completion of three years service in the honorary rank of Captain

Medical News.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND —At a meeting held in London on July 31st last it was decided to hold a general meeting of the medical profession in October in order to nominate a representative general committee and to discuss the best methods of promoting this appeal This meeting has now been arranged for Wednesday Oct 10th at the Medical Society's Rooms 11 Chandos-street, Cavendish square W, at 5 P.M It is hoped that the meeting will be largely attended in order that the appeal may be well supported and made widely known to the medical profession and the public

OPENING OF THE WINTER SESSION AT THE MEDICAL SCHOOLS —Most of the London medical schools will begin their winter work on the first day of October, but University College Medical School does not open until Oct 3rd There will be no inaugural addresses except at the London School of Medicine for Women, where as we announced last week, Dr Louisa Garrett Anderson, C.B.E will deliver an address on "Ambition" At some of the medical schools a distribution of prizes is announced, Dr Christopher Addison, Minister of Reconstruction, performing this function at Charing Cross Hospital at 3.30 P.M, and Lady Cicely Gathorne-Hardy at the Middlesex Hospital

MEDICAL SOCIETY OF LONDON —The programme of events for the coming winter session has been issued The opening meeting will be held at 11, Chandos street, Cavendish square, W, on Monday Oct 8th, at 8 P.M when the annual (business) meeting will be followed at 8.30 by an inaugural address by the incoming President, Sir StClair Thomson on The Founder and the Foundation of the Medical Society Dr R Hutchison and Dr E I Spriggs will introduce a discussion on War Bread and its Effects on Health During the session discussions will be held on Modern Artificial Limbs and their Influence upon Methods of Amputation, The Value and Limitations of Sanatorium Treatment for Tuberculosis, Facial Surgery, and Anæsthetics in War Surgery

HUNTERIAN SOCIETY —The autumn session opens with the delivery of the first Hunterian lecture on Modern Antiseptics, by Lieutenant Colonel Sir Alfred Pearce Gould (Oct 3rd) Discussions on Medical Classification of Recruits (Nov 7th) and Nervous Breakdown (Dec 5th) will be opened by Sir Robert Jones and Dr Edwin Ash respectively The second Hunterian lecture on War time Orthopædic Surgery will be delivered by Sir Robert Jones on Jan. 2nd and the Annual Oration by Dr O K. Williamson on Feb 20th The hour in each case is 9 P M All members of the medical profession are invited to attend

BOOKS, ETC, RECEIVED

BELL, G AND SONS London
British Boys Their Training and Prospects Second series. By Colonel M J King Harman. 2s net.

BUFFARINI, A. GIUDI Buenos Aires
Linfadenitis en la Infancia. Por el Dr Juan Carlos Navarro

FALCONER, JOHN Dublin.
Transactions of the Royal Academy of Medicine in Ireland. Vol. XXXV Edited by J Alfred Scott M.A., M.D F.R.C S I

HARE PHARMACY Calcutta.
Outlines of Hygiene and Public Health for Students, Sanitary Officers and Practitioners. By Ramesh Chandra Ray L.M.S., Member of the Governing Body Belgachia Medical College, Calcutta

HOEPLI ULRICO Milan
Congelamenti (Patogenesi e cura) Di Maggiore Medico Casali Piero Direttore del Servizio Sanitario del Comando Supremo e Capo Medico Pullè Felice Prezzo L. 6.50
Manuale Pratico di Profilassi e Disinfezione per uso de R. Esercito di Dott Valfredo Chiodi Capitano Medico Comandante la squadra di profilassi a disposizione della Commissione Sanitaria Ispettiva dell Intendenza Generale del R. Esercito Prezzo L. 4.50

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor not later than 9 o'clock on the Thursday morning of each week such information for gratuitous publication.*

ALLAWAY E E., M.B., Ch.B Aberd., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Eakring District of the county of Nottingham

EVANS J D., M.R.C S Eng L.R.C.P Edin., Certifying Surgeon under the Factory and Workshop Acts for the Ebbw Vale District of the county of Monmouth.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

BARNSLEY BECKETT HOSPITAL.—Second Female House Surgeon Salary £225 per annum with board &c

BIRKENHEAD BOROUGH HOSPITAL —Junior House Surgeon Salary £175 per annum with board &c

BLACKPOOL VICTORIA HOSPITAL.—Female House Surgeon Salary £250 per annum with board &c

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum with board &c

BURY INFIRMARY —*Junior House Surgeon Salary £150 per annum* with board, &c

CAMBRIDGE, ADDENBROOKE S HOSPITAL —House Surgeon and House Physician *Salary at rate of £300 per annum each with board &c*

COLMONELL PARISH LOWER DISTRICT OF —Medical Officer Salary £70 per annum Vaccination salary £2 per annum

EDMONTON GENERAL *MILITARY HOSPITAL.—Medical Officers* Salary at rate of £1 per day and keep

EVELINA HOSPITAL FOR SICK CHILDREN Southwark S E —Clinical Assistants in Out-patient Department (Medical Surgical Aural and Dermatological) for three months

LEEDS PUBLIC DISPENSARY —Resident Medical Officer Salary £200 per annum with board &c

LIVERPOOL, BROWNLOW HILL POOR LAW HOSPITAL — Resident Assistant Medical Officers Salary at rate of £300 per annum with *rations &c.*

MANCHESTER EDUCATION COMMITTEE.—Female Assistant School Medical Officer, unmarried Salary £300 per annum

MIDDLESBROUGH NORTH ORMESBY HOSPITAL.—Assistant House Surgeon Salary £100 per annum with board &c

NORTHERN SANATORIUM AND CONVALESCENT FEVER HOSPITAL, Winchmore Hill N — *Temporary Resident Assistant Medical* Officer Salary 7 guineas per week

NOTTINGHAM GENERAL HOSPITAL.—Female House Surgeon for six *months Salary at rate of £250 per annum, with board &c*

NOTTINGHAM AND MIDLAND EYE INFIRMARY —Female House Surgeon Salary £200 to £250 per annum with board &c

OXFORD EYE HOSPITAL.—*Resident House Surgeon*

ROYAL BERKSHIRE HOSPITAL —Senior Resident Medical Officer Salary £350 per annum with board, &c. Also House Surgeon for six months Salary at *rate of £250 per annum* with board &c Also Second House Surgeon for six months Salary at rate of £200 per annum if qualified (if unqualified £150) with board &c

ST *HELENS COUNTY BOROUGH —Temporary Assistant Medical Officer* of Health Salary £350 per annum

SALISBURY GENERAL INFIRMARY —House Surgeon Salary £150 per annum, with board &c

SHEFFIELD ROYAL INFIRMARY —Casualty Officer for six months Salary £150 per annum with board &c

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon Salary £100 per annum, with board &c.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. —House Physician

WEST BROMWICH DISTRICT HOSPITAL.—Senior House Surgeon unmarried Salary £160 per annum with board &c.

WEST HAM UNION INFIRMARY Whipps Cross road Leytonstone E.—Temporary Assistant Medical Officer Salary £300 per annum with usual residential allowances

WOLVERHAMPTON *AND STAFFORDSHIRE* GENERAL HOSPITAL.—Resident Medical Officer for six months Salary at rate of £150 per annum with board &c.

THE Chief Inspector of Factories, Home Office, London S W gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Barry (Glamorgan)

Births, Marriages, and Deaths.

BIRTHS

FIELD —On Sept. 20th at the Anglo-American Hospital Cairo Katherine *the wife of Captain* Philip Field R A.M C of a son

LOVELL.—On Sept. 24th at Earl s Court road the wife of A. Gordon Haynes Lovell M D F R C S of Clarges-street, W of a daughter

SCOTT —On Sept. 19th at The Birches Bourne End the wife of S Gilbert Scott, M R C S, L.R C P of Bentinck street London W of a son

MARRIAGES

COPLANS—ROUND —On Sept 22nd at St *Luke s Church* Cork Captain E Coplans R.A M C to Kathleen Edith younger daughter of Mrs. Round and the late F J Round of Bournemouth

M CORMACK—WARNOCK.—*On Sept 12th* at Drumbo Presbyterian Church Captain Campbell M'Neill M Cormack M C R A M C to Ella Todd only daughter of the late Rev Wm James Warnock B A. B D

SMITH—PITMAN —On Sept 19th at St. Paul s Knightsbridge Colonel Maynard Smith, M B F R C S A.M S to *Miss Isabel Pitman* daughter of F I *Pitman* of Braymead, Bray Berks

WATSON—ELLIS —On Sept. 18th at St Michael s and All Angels Church Bramhall Captain John Watson R A.M C of London*derry to Marjorie* younger daughter of Mr and Mrs Arthur Ellis Coniston Bramhall Cheshire

DEATHS

LEWER —On Sept 18th, at his residence Wickham Burley in Wharfedale Yorkshire Edward Stewart Lewer, M D aged 51

N.B —A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

Notes, Short Comments, and Answers to Correspondents.

BACTEROL

THIS is a disinfectant containing among other things formalin and essential oils compounded at a high temperature It is prepared in four forms (*a*) Medical type for medical use treatment of wounds &c , (*b*) general type for general use, (*c*) *vaporising fluid for disinfection* with the vapour, and (*d*) aeriform type for inhalation

Bacterol Sterilising Cabinet —This is a light wooden box or chamber made in various sizes Bacterol vaporising fluid is vaporised and the vapour is passed into the cabinet in which the articles to be disinfected have been placed The bacterol is vaporised by a special apparatus consisting of copper coil heated with a blow lamp The temperature in the cabinet does not rise above 100°F The vapour is fatal to bacteria, including anthrax spores, and is a powerful insecticide, killing lice, clothes moth, wood worm &c The cabinet is used by brush manufacturers for sterilising hair for brushes since the occurrence of anthrax caused by shaving brushes, and is employed by the Y M C A for killing lice and other vermin in bedding and clothing The vapour has no deleterious action upon clothing bedding, coloured fabrics, furs leather &c

Isle of Wight Disease of Bees —Many experienced bee keepers assert that bacterol is a cure for this disease Sugar syrup is medicated with bacterol and given to the bees The hives are sprayed with a *1 in 80* solution of bacterol For the winter feeding of bees with sugar syrup the Government has set aside 20 tons of sugar This has been allotted to Messrs Pascall to deal with The Board of Agriculture has stipulated that this sugar shall be converted into "candy and be medicated with bacterol and coloured with a pink dye so as to render it unfit for human consumption It is placed on the market under the name of "*Pink Bacterol Bee Food*

Medical Uses —For all surgical purposes—for lotions gargles, sprays, &c Bacterol appears to be particularly valuable in the local treatment of venereal and other sores and ulcers The aeriform type is valuable for cutting short catarrhal affections of the respiratory tract Bacterol is practically non toxic It is prepared by Messrs Menley and James, Limited, Menley House, Farringdon road, London, E C

AILMENTS OF MINOR POETS

HINTS FOR MEDICAL PRACTITIONERS

To the Editor of THE LANCET

SIR,—Reference was *recently* made in THE LANCET to the increased activity of our minor poets Scarcely a day passes but some new volume of verse makes its appearance And the average excellence of these little books is commendably *high For the modern singer* is, as a rule, well aware of the wisdom of the adage which proclaims brevity to be the soul of wit He seldom seeks to inflict on us an epic in 12 books or a didactic poem with notes and an appendix. Indeed the *fair white margins* whereon his lyrics shyly hide themselves are sometimes so expansive that we have to hunt around to find his sonnet with almost as much persistence as an air pilot tracking down a submarine *And for* this we thank him For very *few poets*—even of the major variety—are gifted with sufficient emotional opulence to ensure us quantity as well as quality But there are still occasions when the minor poet, in the exuberance of youth (*and sometimes, alas, in the* exuberance of age!) not merely 'devotes himself but "abandons himself to poetry Abandonment is bad In his abandoned state he is in danger not only of losing sight of the paper shortage but also of *falling a victim to many* regrettable ailments To assist the medical practitioner in affording relief to such cases the following brief hints will, it is hoped, prove *of service*

1 *Heart fractures* —The sufferer from this complaint will probably describe his condition in lines conveying in appropriate terms the following information :—

> I feel that my heart is breaking
> Though I try *for your sake to smile*

When called in to a case like this don t waste time in argument. Clap a stethoscope on the *patient s* chest and listen If the heart 's breaking there is considerable danger—and not only *to the patient.* The hearts of minor poets *not only break " they sometimes* burst " Stand clear and take cover if possible Charge double fees to cover *the* additional risk

2. *Inability to die.*—Some poets are fond of declaiming I could not die in Springtime " or *I could not* die in Summer " or How could I pass on such a night as this?" rhyming this" (in the next line but one) with kiss " Cases of this kind *should* be confronted with

instant proof Lose no time in prescribing a stiff dose of prussic acid. If the sufferer really finds it impossible to die he will not refuse to take the stuff And should the action of the potion prove he was misinformed there will be one minor poet the less. For this you will earn the lyrical gratitude of the other minor poets.

3. *Prolonging the season* — "With You tis always Summer dearest Friend" this kind of statement is constantly being made by minor poets They labour under a delusion. Not even the Summer Time Act has been able to prolong summer To cure this strange obsession choose the bleakest day of January, take the patient—clad in summer attire—to the house of the "dearest Friend" and persuade him (or her) to sit in the garden for a couple of hours As soon as the teeth begin to chatter ask whether it is winter or summer You will certainly receive an accurate though probably unrhymed answer

4 *Seeing angels* — "Thou art an Angel, O my Love" Such a statement is indicative of mental trouble Nearly all minor poets mistake their loves some time or other for angels. There is only one way to cure them of this sad mistake Insist upon the patient marrying the object of his (or her) affections immediately By this treatment the angelic obsession will gradually become dislodged.

5. *Scalds from kisses* —When a minor poet ejaculates "I feel thy burning kiss upon my cheek" you will know that he is in considerable danger Lose no time in applying to his cheek butter margarine, train-oil or any old lubricant you can lay hands on If after this he still insists that the kiss burnt him you had better commit him to the county asylum

6. *Ocular stabbings* —Minor poets are frequently the victims of outrages of this kind. How often do they cry "Your glance has stabbed me to the core" or words to that effect? If on being called in, you find that the "core" has really been punctured, get a cycle repair outfit and proceed as you would with a burst tyre To locate puncture hold the patient under water and watch for bubbles

7 *Retention of tears* —Minor poets are not infrequently attacked by a curious affection of the tear glands which they express in some such words as the following —

"How can I weep when earth and sea and sky
Are one vast Ecstasy"

Talk to the sufferer kindly Point out to him that a spell of bad weather is certain to set in before long and that these "vast ecstasies" seldom survive the summer You can also assure him that many people who shed tears at extremely rare intervals have nevertheless lived to a ripe—and even a rotten—old age and died of another complaint in the end. In acute cases insist on the use of onions

8. *Exchange of diaphragms* —Was it not Sir Philip Sidney who sang "My true love hath my heart and I have his"? Minor poets have frequently said the same thing since—only not so well. If called in to attend a case of this nature you will have *to* proceed cautiously It is the most difficult thing in the world to determine whether a patient is in possession of his own heart or somebody else's they are all so alike. And nobody is anxious to give up his heart Your best plan will be to insist on a thorough examination with X rays and try to determine whether the respective hearts fit. In cases where the patient has a fit there will be no more to be done

I am Sir, yours faithfully and apologetically,

Sept. 19th 1917 R B I

HOSPITAL WORK IN FIJI.

ACCORDING to the Fiji Blue-book for 1916 the population increased during the year by 24 024, and now totals 163 565 The Colonial Hospital the principal medical institution in the colony, is under the supervision of the chief medical officer with a resident medical officer in charge who is assisted by a junior medical officer The nursing staff consists of a matron, a senior and a junior staff nurse, a graduate nurse and six probationers The number of patients treated in 1916 was 1778, of whom 185 were Europeans There is at Levuka a branch hospital under the charge of the district medical officer assisted by a European and a native nurse, admissions during 1916 were 483 There are 11 provincial hospitals for the treatment of native Fijians these are supervised by Government medical officers and the admissions totalled 5271 There is a lunatic asylum at Suva for the reception of both sexes of all nationalities, with separate accommodation for Europeans During 1916 there were 39 admissions and 19 discharges and there were 56 patients at the close of the year On Dec 31st, 1916, there were 257 patients in the leper asylum on the island of Makogai which is under the charge of a medical superintendent who is assisted by a European medical officer and five European and three Fijian nursing sisters

WANTED TRAINING ON A DAIRY FARM

To the Editor of THE LANCET

SIR —Can any of your readers put me in touch with a farmer of good social position in a southern county who would entertain the idea of taking into his household a young lady who desires to learn dairy farming?

I am Sir yours faithfully

LEONARD MOLLOY

3 Bligh on parade Blackpool Sept 19th 1917

Idue —We will attempt to deal with a very disputed subject in an early issue

Tenax —We are obliged to our correspondent for a useful letter but he has omitted to entrust us with his name and address.

Medical Diary for the ensuing Week.

SOCIETIES

HUNTERIAN SOCIETY at the Royal Society of Medicine 1 Wimpole-street W

WEDNESDAY —9 P.M., Hunterian Lecture —Lieut. Col Sir Alfred Pearce Gould, K.C V O Modern Antiseptics

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE West London Hospital Hammersmith road W

MONDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Gray Operations Mr B Harman Diseases of the Eye. Dr Simson Diseases of Women.

TUESDAY —2 P.M. Medical and Surgical Clinics X Rays Mr Baldwin Operations Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet Diseases of the Skin

WEDNESDAY —10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis Operations of the Throat, Nose and Ear 2 P.M. Medical and Surgical Clinics X Rays Mr Pardoe Operations

THURSDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye.

FRIDAY —10 A.M. Dr Simson Gynæcological Operations 2 P.M. Medical and Surgical Clinics. X Rays. Mr Baldwin Operations. Dr Banks Davis Diseases of the Throat, Nose and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M. Dr Saunders Diseases of Children Dr Banks Davis Operations of the Throat, Nose, and Ear Mr B Harman Eye Operations. 2 P.M. Medical and Surgical Clinics. X Rays Mr Pardoe: Operations.

NORTH EAST LONDON POST GRADUATE COLLEGE Prince of Wales's General Hospital, Tottenham N

MONDAY —Clinics:—10.30 A.M. Surgical Out patients (Mr E Gillespie) 2.30 P.M. Medical Out-patients (Dr T R. Whipham) Gynæcological Out-patients (Dr Banister) 3 P.M., Medical In patients (Dr R. M. Leslie)

TUESDAY —2.30 P.M., Surgical Operations (Mr Carson) Clinics:— Medical Out-patients (Dr A. G Auld) Surgical Out-patients (Mr Howell Evans) Nose Throat and Ear Out-patients (Mr C H. Hayton) Radiography (Dr Metcalfe) 3.30 P.M., Medical In patients (Dr A. J Whiting)

WEDNESDAY —Clinics:—2.30 P.M. Throat Operations (Mr C H. Hayton) Children Out patients (Dr T R. Whipham) Eye Out patients (Mr R P Brooks) Skin Out-patients (Dr H. W Barber) 5.30 P.M. Eye Operations (Mr R. P Brooks)

THURSDAY —2.30 P.M. Gynæcological Operations (Dr A. E. Giles) Clinics:—Medical Out-patients (Dr A. J Whiting) Surgical Out patients (Mr Carson) Radiography (Dr Metcalfe) 3 P.M. Medical In patients (Dr R. M. Leslie)

FRIDAY —2.30 P.M. Surgical Operations (Mr Howell Evans) Clinics:—Medical Out-patients (Dr A. G Auld) Surgical Out-patients (Mr E Gillespie) Eye Out patients (Mr R P Brooks)

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a m. by Steward's Instruments*)

THE LANCET Office Sept. 26th, 1917

Date.	Rain fall.	Solar Radio in Vacuo	Maximum Temp Shade	Min. Temp	Wet Bulb	Dry Bulb	Remarks.
Sept. 20	..	95	65	55	55	57	Fine
21	..	107	67	51	52	55	Fine
22	..	92	65	52	54	57	Fine
23	..	93	69	56	57	60	Fine
24	..	104	72	54	55	56	Fine
25		101	74	52	54	54	Fine
26	..	83	66	54	53	61	Cloudy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

The following journals, magazines &c. have been received —Archives of Radiology and Electrotherapy Archives de Médecine et Pharmacie Navales. St Thomas's Hospital Gazette Medical Officer American Journal of Medical Sciences Mercy and Truth. South African Medical Record Clinique Ophtalmologique Maternity and Child Welfare Hospital Gazette Journal de Médecine de Bordeaux.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession may be sent direct to this office

Lectures, original articles and reports should be written on one side of the paper only *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot undertake to return MSS not used

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A Report
ON
THE PATHOLOGY DIAGNOSIS AND TREATMENT OF ABSOLUTE HYSTERICAL DEAFNESS IN SOLDIERS

BY A F HURST, M D OXON, F R C P LOND,
PHYSICIAN AND NEUROLOGIST TO GUY'S HOSPITAL, AND NEUROLOGIST TO R.V H NETLEY TEMPORARY MAJOR, R.A.M C

AND

E A. PETERS, M D CAMB, F R C S ENG,
SURGEON ROYAL EAR HOSPITAL, AND AURAL SURGEON TO R.V.H NETLEY TEMPORARY CAPTAIN R.A.M.C.

TWO CASES OF HYSTERICAL DEAFNESS CURED BY "OPERATION"

THE following case of hysterical deafness following shell shock was cured by operation"

Lance Corporal M 26 years old, was blown up by a shell on August 29th, 1916 He became completely blind, deaf, and dumb, although he did not lose consciousness His sight returned the following day On reaching England he was able to read and write, and he talked in his sleep In spite of treatment with encouragement, electricity, and etherisation, no further improvement occurred until one night in November, when he woke up and asked the sister for a drink. After this he was able to talk normally, but the deafness remained

The patient was transferred to the Neurological Section at Netley on March 21st 1917 seven months after the onset of deafness He was found to be completely deaf both to air and bone conduction, though he could feel the vibration of a tuning fork on his mastoid A loud noise just behind his head caused a slight tremor of his hands, blinking and dilatation of the pupils although he heard nothing a slighter reaction was produced on the second and third occasion when the noise was repeated, after this it disappeared completely and did not return again

The functional activity of the vestibular nerve and semicircular canals was then tested the normal nystagmus and giddiness demonstrated that this system was unaffected As our experience shows that organic disease or injury of sufficient intensity to produce severe cochlear deafness is invariably accompanied by loss of vestibular activity, we were assured that the internal ear was free from organic changes This was rendered still more probable by the fact that immediately after the explosion the deafness was associated with mutism, which is always hysterical when it develops after shell shock. The patient was hypnotised by being made to stare at a lens for 15 seconds but the deafness persisted he could not be made to respond to any suggestion as he was unable to hear and a very loud noise produced no auditory motor reflex the pupils as well as the eyelids remaining fixed

The deafness also persisted during natural sleep, as it was found impossible to wake the patient by shouting "fire" and by banging a poker against a coal scuttle within a few inches of his head and no reflex contraction of his eyelids was observed In the morning he had no recollection that anything unusual had occurred during the night Suggestion with the aid of electricity in which he had great belief and attempts to re educate the sense of hearing with various noises completely *failed*

On April 16th he was told that if in spite of the treatment he had had before and since admission his hearing had not returned by the 20th we should have to do a small operation on his ear which would be certain to cure him As his hearing had not improved on the 20th he readily consented to the operation Two small superficial incisions were made behind his ear under light etherisation and a suture was inserted A loud noise was made during the operation, he heard it and jumped off the table In the course of the next few minutes normal hearing returned in both ears to his intense delight as he had recently become extremely depressed at the absence of any sign of improvement after seven and a half months His hearing was accurately tested the next day and it was found that it was perfectly normal both to air and bone conduction and the auditory motor reflexes had returned He was discharged to duty three weeks later feeling perfectly fit He visited the hospital on June 29th a few days before he left for France His hearing was normal and he was well in every way

Another case of hysterical deafness following gun deafness was also cured by "operation"

Gunner F, aged 18, says he has been slightly deaf all his life He became gradually deafer after gun practice whilst training in England until he could not hear at all, although he had never suffered from any definite concussion and had not served abroad He was totally deaf to air and bone conduction, and it was impossible to wake him by the loudest noises when he was asleep The deafness also persisted during deep hypnosis so that he could not be made to respond to suggestion The normal nystagmus and giddiness followed rotation, and he had a brisk auditory motor reflex both when awake and during sleep, but it was clear that this was not associated with hearing

Ordinary persuasion, suggestion, and hypnotism having failed to produce any improvement after five months, he was advised to undergo an operation, which he was told would certainly cure him He was given a little ether, and an incision was made behind his right ear, a plate of iron being continuously hammered at the same time He jumped from the table in a half-drunken condition, hearing quite well, and said he must have had a dream, as he thought he had been deaf The next day he said that he could hear better than he had ever done before He was discharged to duty 10 days later Two months later a report was received that his hearing remained good, he was doing his work well, and had applied for a commission

Examination of his ears a week after the operation showed that he could only hear a 30-inch watch at 20 inches, the upper and lower limits of hearing were normal Both drums were indrawn and showed evidence of chronic catarrh which was doubtless the cause of his long standing deafness He was thus predisposed by chronic ear disease to gun-deafness and the temporary deafness produced during gun practice was perpetuated and exaggerated by auto-suggestion The true gun-deafness had disappeared spontaneously, so that when the total deafness resulting from suggestion was cured by suggestion in the form of an operation, his hearing returned to its original state

ETIOLOGY

The momentary deafness which is the natural result of the terrific noise caused by the explosion of a big shell in the immediate neighbourhood may make such an impression on the mind of a soldier that on coming to himself whether he has actually lost consciousness or not his first thought is for his hearing especially if it was already impaired by preceding disease, and he may be so convinced that he is permanently deafened that he becomes actually deaf as a result of auto-suggestion

The temporary deafness which occurs in gunners from the effect of the constant repetition of very loud noises may in the same way become perpetuated and exaggerated by auto-suggestion

Lastly organic deafness especially if the onset is acute, as in that due to involvement of the auditory nerve trunk in cerebro spinal fever, may remain complete after the disappearance of the active inflammation has been followed by restoration of some of the nerve fibres, so that a certain amount of hearing should have returned This, again is due to auto-suggestion, the final deafness being organic with a superadded hysterical element which is capable of removal like all hysterical symptoms by suggestion

DIAGNOSIS

We have found it necessary to discard almost all the criteria formerly used in the diagnosis of organic deafness from deafness due to hysteria or malingering

1 *History* —Severe deafness following the explosion of a powerful shell is generally hysterical though a lesser degree of organic deafness of a more or less permanent nature may be produced at the same time owing to rupture of the drum or hæmorrhage into the tympanum which are often followed by infection of the middle ear or to interference with the cochlear and vestibular systems probably due to infiltration œdema or hæmorrhage into the labyrinth It is doubtful whether absolute organic deafness ever results from hæmorrhage into the internal ear following shell shock as no anatomical evidence of such an occurrence has yet been forthcoming Deafness following an acute illness especially cerebro-spinal fever is at any rate always organic, but the deafness is in our experience frequently increased as a result of auto suggestion no functional improvement occurring when the anatomical condition improves

2 *Bone and air conduction* —We have employed the following quantitative tests

(*a*) Watch test for air conduction The distance a watch is heard (x) is expressed as a fraction of the distance at which it is heard by the normal ear (y) $\frac{x}{y}$

(*b*) Modified Schwabach test for bone conduction The base of a vibrating C tuning fork is held to the base of the mastoid whilst the other hand curtains the meatus The patient holds up his finger when the sound is no longer heard, the observer then transfers the tuning fork to his own normal mastoid and notes the number of additional seconds during which he hears the fork

These tests and comparison between bone and air conduction as in Rinne's test, are, however, only of value in the slighter cases, as in many instances deafness is absolute and no hearing is possible whether the sound is conducted by bone or through the air The vibration of a tuning fork held on the mastoid process is often felt and the aerial vibration caused by very loud noises is often appreciated, even when no sound is heard,

3 *Auditory motor or jump reflex* —A sudden noise normally causes an individual to jump and often to blink and the pupils dilate, the "jump," at any rate, is a protective reflex and represents the preparation for flight or fight An officer whose left motor cortex had been almost completely destroyed went to *The Man who Stayed at Home* about four months after he was wounded His right arm jumped violently when the gun shot rang out on the stage, although no trace of voluntary movement returned until three months later The efferent part of the reflex is thus subcortical

In certain war neuroses of emotional origin in which the reflex is exaggerated jumping continues during sleep and deep hypnosis, although the patient does not hear the noise which induces it, even in a dream The afferent part of the reflex is thus subcortical That the reflex is quite independent of actual hearing is further shown by the fact that during deep hypnosis with the eyes open individuals in whom the reflex is normal or only slightly exaggerated do not always jump or blink and the pupils do not dilate even when a poker is banged against a shovel within a foot of the ear, although they answer even whispered questions and obey whispered commands, and the cutaneous and tendon reflexes remain unaffected Experiments on animals by Sherrington confirm these clinical observations and indicate that the auditory motor reflex is a function of the mid brain

A slight reflex was present in most of our cases of hysterical deafness, but it became less marked and sometimes disappeared completely or was confined to a slight dilatation of the pupil when the test was repeated A very nervous but totally deaf mute remained completely unmoved, never jumping or showing a flicker of his eyelid during one of the severest thunderstorms we have known and yet the next day he was completely cured by suggestion

It is thus clear that the presence of the auditory motor reflex does not imply that hearing occurs, and a man who says he can hear nothing but shows a normal reflex is not necessarily a malingerer, but may be suffering from genuine hysterical deafness or even organic deafness due to a bilateral lesion of the cortical auditory centres

4 *Persistence during sleep* —As hysterical symptoms are due to suggestion, it might be expected that they would not persist during sleep and Babinski regards this as a definite law Our experience agrees with his with regard to all other hysterical symptoms which we have investigated, such as paralysis, contractures, and anæsthesia, and we have seen several deaf mutes who talked in their sleep, but we have found that hysterical deafness, the behaviour of which during sleep does not appear to have been tested by Babinski, is an exception Thus, greatly to our surprise, we found it quite impossible to wake either of our two patients who were suffering from total hysterical deafness, by shouting or by making other very loud noises within a foot of their heads We convinced ourselves that deception was impossible, and the hysterical nature of the deafness in both cases was at a later date conclusively proved by their instantaneous recovery with powerful suggestion In one patient a slight twitch of the eyelids was sometimes observed with a particularly loud noise, but not in the other It seems probable that a malingerer could be detected by this test, as he would certainly wake if a loud noise was made when he was asleep, whereas in hysterical and organic deafness waking does not follow

5 *Effect of hypnosis* —We had expected that hearing would return in hysterical cases during hypnosis, but we found it quite impossible to make the patients obey any command or show any signs of hearing, and no reflex was produced, although both were deeply hypnotised on several occasions The synapses thus appear to remain unswitched during hypnosis as they do during sleep

6 *Change in the voice* —It is difficult to understand why there should be any difference in the effect on the voice of total organic deafness and total hysterical deafness, as the change is simply a result of the patient's inability to hear his own voice It is, however, a fact that we could not observe anything abnormal about the speech in any of our hysterical cases,

7 *Vestibular reaction* —We have found that the only test upon which absolute reliance can be placed in the diagnosis of hysterical deafness from organic deafness is the presence of normal vestibular reactions in the former and their loss in the latter The vestibular reactions are entirely beyond the control of the will, and it is therefore inconceivable that they should disappear as a result of suggestion As hysterical symptoms are always caused by suggestion, the vestibular reactions must remain unaffected in hysterical deafness This test has proved of great value in cases of total deafness But it must be remembered that in partial organic deafness the vestibular reactions are lost in the severer cases and exaggerated in the slighter cases, and the organic deafness may be accompanied and exaggerated by the simultaneous presence of hysterical deafness, which it is quite impossible to recognise except by the improvement which follows treatment by suggestion The vestibular reactions may be investigated by the rotation, caloric, or electric tests, in all of which nystagmus and giddiness occur in normal individuals, but not if the vestibular nerves are involved We have employed the rotation test for our cases the patient being tied into an arm chair, which is rotated ten times in 10 seconds

PATHOGENESIS

Hearing necessitates listening Inattention during a dull sermon results in total deafness to the sermon, and in hysterical deafness the patient is so convinced that he cannot hear that he does not listen. Although the sound vibrations reach the ear in the normal way they do not give rise to the slightest auditory sensation because of this inattention The synapses at one or more of the cell stations in the auditory path to the cerebral cortex must, therefore, be unswitched, probably as a result of retraction of the dendrons In absolute hysterical deafness the auditory motor reflex, which is a function of the mid brain, may be abolished, or greatly diminished One of the unswitched synapses must, therefore, be below the mid brain and either in the auditory nucleus or less probably in one of the intermediate cell stations—the superior olive or the nucleus of the lateral fillet

The persistence of the deafness during hypnosis and natural sleep shows that during the prolonged inattention of hysterical deafness which has lasted for a considerable period the unswitching of the synapses is more profound than that which normally occurs during deep sleep, in which the synapses can always be forced by a loud noise

TREATMENT

Deaf mutism

Uncomplicated deafness is the most difficult of all hysterical symptoms to treat, mutism is one of the easiest It is therefore fortunate that most cases of hysterical deafness are associated with mutism, as the return of speech in a deaf mute generally convinces him that he can also hear especially if he has been told that this will be the case He listens as soon as he finds he can speak, and the unswitched synapses are once more switched on

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We have only seen two cases of absolute hysterical deafness without mutism, and in one of them mutism was originally present, but spontaneous recovery had occurred some months earlier Both cases had had various forms of treatment before we saw them Simple encouragement and the promise of recovery had proved unavailing and when we repeated the promise to a man who was still completely deaf after eight months, he not unnaturally received our promise with considerable scepticism. We tried the effect of making very loud noises of different kinds near the patients ears in the hope that they might break through the resistance, and that when they were heard, re education with other sounds could be begun But this method which is sometimes successful in the partially deaf was unavailing as the deafness was absolute, and no noise, however loud, was heard. On many occasions the patients themselves shouted as loudly as they could through the chest-piece of a binaural stethoscope the ear piece of which was in their own ears and at other times the chest piece was put on an iron plate which was then hammered but they heard nothing Etherisation had been tried without success before we saw them. Various forms of suggestion were tried, one patient had a great belief in electricity but although we encouraged him to believe it would cure him it had no effect Both patients were hypnotised on a number of occasions without difficulty, but this proved useless as the deafness persisted and they could not be made to obey any commands which other hypnotised individuals obey immediately so that suggestions of recovery which are effective in patients suffering from incomplete hysterical deafness naturally gave no result, other loud noises and familiar tunes from a gramophone placed in contact with the ear during hypnosis had no more effect than shouting and as the deafness persisted during sleep it was impossible to cure the patients by suddenly exciting them during the night.

As all treatment had failed we told the more intelligent of the two patients that if he did not get well in the next week we would be compelled to advise him to undergo an operation which we had wished to avoid but which was quite certain to cure him. He was no better at the end of the week and was eager to have the operation He was given enough ether to make him excited and two small cuts were then made behind his ear, a hammer was banged on a sheet of iron during the "operation and the moment after the incision had been made the patient jumped off the table with his hearing restored The other patient was unwilling at first to undergo an operation but finally consented, as he was naturally impressed by the recovery of the first patient who was in the same ward and had been deaf for a much longer period The same 'operation was performed and complete recovery occurred in exactly the same way The joy shown by both patients on their recovery whilst in the theatre and on return to the ward was so obviously genuine that there could be no possible question about the genuineness of the deafness, at one time we had been rather doubtful about the second patient but fuller investigation had convinced us more than a fortnight before that he was not malingering

CONCLUSIONS

We are convinced from our experience in these cases that absolute deafness associated with normal vestibular reactions should be regarded as hysterical and when simple encouragement fails as will generally be the case if the patient is not also dumb an operation should be performed in the way we have described after the patient has been made to feel quite confident that it will restore his hearing

A Comparative Study

OF

THE REACTIONS TO HUMAN AND BOVINE TUBERCULIN APPLIED BY THE METHOD OF VON PIRQUET

IN CASES OF TUBERCULOUS DISEASE OF THE BONES AND JOINTS[1]

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In aid of the latter inquiry I sent for examination in the Board s Pathological Laboratory material from abscesses or sinuses occurring in 116 children[3] who were affected with tuberculous bone or joint disease and were patients in the Lord Mayor Treloar Cripples Hospital at Alton. In discussions which I had with the Board's pathologists, Dr A. Eastwood and Dr F Griffith, it occurred to us that, having these cases under observation, it would be a matter of interest and some practical importance to undertake a quantitative investigation of the von Pirquet cutaneous test on such of these patients as were available, to check the reactions by colour photographs and to endeavour to ascertain —

1 Whether the reaction to cutaneous inoculations of tuberculin was constantly present in patients suffering from undoubted tuberculous lesions of the bones or joints—that is in patients from whose lesions the tubercle bacilli had been isolated

2. If not constantly present under what circumstances the reaction would not appear

3 Whether by using both human and bovine tuberculin for the von Pirquet test it would be possible to ascertain, from the reaction which followed, whether the patient was suffering from tuberculosis of human or bovine origin

4 Whether the degree of reaction gave any indication of the severity of infection

5 The extent and nature of the reaction

These suggestions were submitted to the Board and received their approval Accordingly, with the aid of a grant from them, I carried out the proposed work during the autumn of 1914, with the assistance of Mrs Gauvain who took colour photographs of the reactions obtained

I applied the von Pirquet test to 80 out of the above 116 cases In order to avoid any risk of unconscious bias I made the inoculations and recorded their results without knowledge of bacteriological reports as to the type of bacillus found

The tuberculins employed were Koch s "old tuberculin' prepared from the human type of bacilli and his tuberculin prepared in identical way from bacilli of bovine origin These were supplied by Messrs Meister, Lucius and Bruning of 3 Jewry street E C who certified as to their purity and efficiency

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The tuberculins were applied to suitable skin scarifications in dilutions of 1/64 1/16 1/4 and in full strength each in approximately equal bulk and controlled by inoculation of a scarification with the same quantity of sterile normal saline solution

In the majority of cases the scarifications were made on the anterior surfaces of both thighs where the legs were not available both arms were used In every case a minimum distance of at least two inches existed between

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(*a*) Watch test for air conduction The distance a watch is heard (x) is expressed as a fraction of the distance at which it is heard by the normal ear (y) $\frac{x}{y}$

(*b*) Modified Schwabach test for bone conduction The base of a vibrating C tuning fork is held to the base of the mastoid whilst the other hand curtains the meatus The patient holds up his finger when the sound is no longer heard, the observer then transfers the tuning fork to his own normal mastoid and notes the number of additional seconds during which he hears the fork

These tests and comparison between bone and air conduction as in Rinne's test, are, however, only of value in the slighter cases, as in many instances deafness is absolute and no hearing is possible whether the sound is conducted by bone or through the air The vibration of a tuning fork held on the mastoid process is often felt and the aerial vibration caused by very loud noises is often appreciated, even when no sound is heard,

3 *Auditory motor or jump reflex*—A sudden noise normally causes an individual to jump and often to blink and the pupils dilate, the 'jump," at any rate, is a protective reflex and represents the preparation for flight or fight An officer whose left motor cortex had been almost completely destroyed went to *The Man who Stayed at Home* about four months after he was wounded His right arm jumped violently when the gun shot rang out on the stage, although no trace of voluntary movement returned until three months later The efferent part of the reflex is thus subcortical

In certain war neuroses of emotional origin in which the reflex is exaggerated jumping continues during sleep and deep hypnosis, although the patient does not hear the noise which induces it, even in a dream The afferent part of the reflex is thus subcortical That the reflex is quite independent of actual hearing is further shown by the fact that during deep hypnosis with the eyes open individuals in whom the reflex is normal or only slightly exaggerated do not always jump or blink and the pupils do not dilate even when a poker is banged against a shovel within a foot of the ear, although they answer even whispered questions and obey whispered commands, and the cutaneous and tendon reflexes remain unaffected Experiments on animals by Sherrington confirm these clinical observations and indicate that the auditory motor reflex is a function of the mid brain

A slight reflex was present in most of our cases of hysterical deafness, but it became less marked and some times disappeared completely or was confined to a slight dilatation of the pupil when the test was repeated A very nervous but totally deaf mute remained completely unmoved, never jumping or showing a flicker of his eyelid during one of the severest thunderstorms we have known and yet the next day he was completely cured by suggestion

It is thus clear that the presence of the auditory motor reflex does not imply that hearing occurs, and a man who says he can hear nothing but shows a normal reflex is not necessarily a malingerer, but may be suffering from genuine hysterical deafness or even organic deafness due to a bilateral lesion of the cortical auditory centres

4 *Persistence during sleep*—As hysterical symptoms are due to suggestion, it might be expected that they would not persist during sleep, and Babinski regards this as a definite law Our experience agrees with his with regard to all other hysterical symptoms which we have investigated, such as paralysis contractures, and anæsthesia, and we have seen several deaf mutes who talked in their sleep, but we have found that hysterical deafness, the behaviour of which during sleep does not appear to have been tested by Babinski, is an exception Thus, greatly to our surprise, we found it quite impossible to wake either of our two patients who were suffering from total hysterical deafness, by shouting or by making other very loud noises within a foot of their heads We convinced ourselves that deception was impossible, and the hysterical nature of the deafness in both cases was at a later date conclusively proved by their instantaneous recovery with powerful suggestion In one patient a slight twitch of the eyelids was sometimes observed with a particularly loud noise, but not in the other It seems probable that a malingerer could be detected by this test, as he would certainly wake if a loud noise was made when he was asleep, whereas in hysterical and organic deafness waking does not follow

5 *Effect of hypnosis*—We had expected that hearing would return in hysterical cases during hypnosis, but we found it quite impossible to make the patients obey any command or show any signs of hearing, and no reflex was produced, although both were deeply hypnotised on several occasions The synapses thus appear to remain unswitched during hypnosis as they do during sleep

6 *Change in the voice*—It is difficult to understand why there should be any difference in the effect on the voice of total organic deafness and total hysterical deafness, as the change is simply a result of the patient's inability to hear his own voice It is, however, a fact that we could not observe anything abnormal about the speech in any of our hysterical cases,

7 *Vestibular reaction*—We have found that the only test upon which absolute reliance can be placed in the diagnosis of hysterical deafness from organic deafness is the presence of normal vestibular reactions in the former and their loss in the latter The vestibular reactions are entirely beyond the control of the will, and it is therefore inconceivable that they should disappear as a result of suggestion As hysterical symptoms are always caused by suggestion, the vestibular reactions must remain unaffected in hysterical deafness This test has proved of great value in cases of total deafness But it must be remembered that in partial organic deafness the vestibular reactions are lost in the severer cases and exaggerated in the slighter cases, and the organic deafness may be accompanied and exaggerated by the simultaneous presence of hysterical deafness, which it is quite impossible to recognise except by the improvement which follows treatment by suggestion The vestibular reactions may be investigated by the rotation, caloric, or electric tests, in all of which nystagmus and giddiness occur in normal individuals, but not if the vestibular nerves are involved We have employed the rotation test for our cases, the patient being tied into an arm chair, which is rotated ten times in 10 seconds

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In this patient the local reaction was more intense than in any of the others in the whole series He was a fair skinned, red haired boy It is probable that these symptoms were not the result of the test but due to other and unascertained causes This was the only case in which the general reaction could be called severe

In the remaining three cases a temperature rising to 100° F was alone noted In no case did the general reaction extend beyond the day following the inoculation

It should be remembered that the patients tested were children and not able to describe symptoms clearly, but they were kept in bed under close observation and no evidence could be found of general reaction more intense than stated above

In no cases were any ill effects observed other than the transient ones exceptionally occurring and already recorded and these apparently need not be anticipated if not commencing within 24 hours of the inoculation

Local Reactions to Human and Bovine Tuberculin

The local reactions to human and bovine tuberculin were found to be essentially similar, and, without the knowledge that the one tuberculin was always inoculated on the right side and the other on the left, it would have been impossible to decide whether any one reaction was due to human or bovine tuberculin

While variations in the degree of the local reactions between one patient and another were frequently marked, it was the exception to find considerable variation in degree between the reactions to human and bovine tuberculin in any one patient Out of the 80 cases investigated in 23 the reactions to human and bovine tuberculin were so nearly equal that it was impossible to decide which was the greater In 21 cases the reaction to human tuberculin was slightly greater than to bovine In 25 cases the reaction to bovine tuberculin was slightly more marked than to human. In four cases the reaction to human tuberculin was markedly greater than to bovine In seven cases the bovine reaction was markedly greater than the human (see Table)

Comparison of Results obtained by Von Pirquet Test with Bacteriological Findings

Reactions	No of cases	Bacteriological findings			
		Human	Bovine	Atypical	Negative
Approximately equal	23	16	5	1	1
Slightly greater to human tuberculin	21	13	8	—	—
Slightly greater to bovine tuberculin	25	14	6	1	4
Markedly greater to human tuberculin	4	2	1	—	1
Markedly greater to bovine tuberculin	7	5	2	—	—
Totals -	80	50	22	2	6

Relation of Degree of Reaction and Severity of Disease

No definite relationship could be established between the degree of the reaction and the severity of the disease

Thus G D No 1 suffering from severe dorso-lumbar caries with sinuses reacted but feebly while L G, No 60 suffering from an approximately similar condition, reacted well

G L No 50 suffering from very severe tuberculous disease of both hip-joints with a sinus in connexion with the right hip reacted very feebly, but M B No 9 suffering from similar lesions of almost equal severity reacted intensely

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I have formed the impression that patients who are weakly and cachectic irrespective of the severity of the local lesions tend to react feebly whereas patients who are strong and vigorous whether their local lesions be severe or slight, may show either an intense or mild reaction to the von Pirquet test

Progressive disappearance of the reaction from the 1/64 scar upwards did not indicate diminished activity of the disease No guide to prognosis could be found by comparing the reactions produced by the weaker and the stronger applications of tuberculin in the same patient

Since this investigation was undertaken a sufficient interval has elapsed to estimate with some degree of accuracy the prognostic value of the quantitative von Pirquet test As might be anticipated, the weakly and cachectic patients have not made such substantial or rapid progress towards recovery as the strong and vigorous ones Yet the reactions obtained in the latter were more intense than those in the former Where weak solutions as well as concentrated solutions give marked reactions the only inference which I could draw was that the patient had abundant reacting power

One of the most marked reactions to all strengths of tuberculin, both human and bovine, occurred in a strong, vigorous and well nourished girl apparently in robust health but with a bad tuberculous family history, and who had been long exposed to danger of infection In this patient I could detect no clinical or radiographic evidence of disease, though, doubtless she was infected

On the other hand, patients with severe lesions with progressive disease often reacted feebly The reaction to inoculation was therefore rather a measure of the degree of resistance of the patient than of the severity of the infection

Results of Investigation

The final result of the investigation may be stated briefly as follows —

1 Local reactions to inoculations of both human and bovine tuberculin were invariably present in all patients from whose pus tubercle bacilli had been isolated

2 Though reactions were invariably present the degree of reaction varied within wide limits

3 Weakly and cachectic patients usually reacted feebly quite irrespective of differences in the severity of their local lesions

4 Strong and vigorous patients exhibited wide differences in the degree of their reactions, irrespective of differences in the extent or the severity of their local lesions

5 The quantitative von Pirquet test was not found to be of value in forming an estimate of the severity of the infection, and was of little prognostic value

6 It was impossible to differentiate the type of tubercle bacillus with which the patient was attacked by the nature of the reaction to the tuberculin employed

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A SERVICE OF MUNICIPAL MIDWIVES FOR CHELMSFORD —In consequence of having to look after the practices of colleagues on war service the remaining doctors in Chelmsford have notified to the medical officer of health their inability to attend maternity cases The circumstances were brought before the town council by the medical officer of health as a matter of urgency and attention was drawn to the difficulties likely to arise in the town with its annual total of births between 400 and 500 Only three certified midwives are working in the borough and the remaining medical men suggested that the difficulty should be solved by the appointment on the part of the council of two certified midwives to assist the local medical service The Local Government Board had assented to the suggestion and agreed to pay one half of the cost incurred by the council After discussion *in camera* the council authorised the medical officer of health to select two midwives at a minimum salary of £75 each on the understanding that the arrangement was to last only for the duration of the war and three months after any one scarification and its nearest fellow, so that adjacent reactions should not become confluent

To minimise the possibility of tuberculin applied to one scarification being conveyed by the lymphatic channels to a neighbouring scarification which had been treated with a weaker solution of tuberculin the solutions, commencing with the control, were applied to the scarifications in order of increasing strength from the distal to the proximal extremity of each limb

Human tuberculin was always applied to scarifications on the right side of the body and bovine tuberculin to scarifications on the left side

To ensure the scarifications being as nearly as possible equal, the same von Pirquet scarifier, supplied by Messrs Allen and Hanburys, was in every case used This instrument may be quickly and conveniently sterilised by passing through the flame

The control solution and the tuberculins were all applied to the scarification marks with sterile glass eye-rods of the same size, a separate rod being kept in each bottle In this way approximately the same quantity of liquid was applied to the centre of each scar The solution was simply placed on the scar, not rubbed in

The bottles containing the solutions of tuberculin were all placed on one tray in ascending order of strength On the right-hand side of the tray was the human tuberculin, on the left the bovine In the middle was the bottle containing the control solution The bottles had distinguishing coloured labels as a further safeguard against the possibility of introducing the wrong solution into the various scarifications

The test was conducted as follows —

The scarifier was first sterilised in the flame and the skin over the area on both limbs to be scarified cleansed with ether The tip of the scarifier was then placed on the skin, the instrument being held vertically, and the scarification was performed by the exercise of firm but gentle pressure while rotating the scarifier between the finger and thumb about half a-dozen times The outer layer of the skin over a minute circular area was thus removed and the vascular subcuticular layer brought to view It was found quite unnecessary to continue the pressure long enough to cause any bleeding

The five scarifications were thus rapidly made on each of the two selected limbs at approximately the same level on both sides and in the same situation The control saline was then applied to each of the most distal scarifications, the human tuberculin in increasing strength to the succeeding scarifications up the right side, the bovine similarly up the left The limbs were kept uncovered until the liquid applied had dried No dressing was employed, and the limbs, when dry, were simply covered with bedclothes in the ordinary way

Local Reactions

In no case did either variety of tuberculin fail to react The degree and extent of the reaction varied within wide limits, and its persistence was also variable, but the response of every case to both tuberculins was particularly noteworthy In the majority of cases reaction was clearly visible within 24 hours, and often could be observed within 12 hours It usually reached its maximum at between 36 and 48 hours, and then gradually faded Frequently the reaction of the quarter and full strength tuberculins remained well marked for a week or longer In exceptional cases the reaction persisted for a month or more and in one case (E M, No 89) who was inoculated on Nov 26th, 1914, the reaction was still clearly visible on March 11th, 1915

In each case the controls were negative After two or three days the scars which had received the control solution became invisible except on close search

At this period even when no definite reaction could be distinguished in the scarifications treated with the lower two dilutions of the tuberculin, the scars made would usually persist Sometimes though no colour change round these scars could be seen, passage of the finger over the scars gave the sensation of a small but definite papule depressed in the centre

In patients not the subject of tuberculous disease this retardation of healing of the scar, to which diluted tuberculin had been applied, did not appear to exist This observation was only made on a few subjects as suitable non tuberculous subjects of the age of the patients tested were not readily available If however, this observation stands the test of further investigation it would afford the suggestion that delayed healing in a scar to which diluted tuberculin had been applied even in the absence of colour change and without palpable raising of the edge of the scar, is in itself evidence of a minimum degree of a positive reaction to the von Pirquet test

Next in order of intensity were the reactions where there appeared a circumferential reddening of the skin about the crateriform depression made by the scarifier, this reddening varied from the merest line in some cases to a total circumference of about an inch or more in others The outer edge of this area was quite distinct and the colour was of almost equal intensity, though perhaps not quite so marked at the periphery The shape was sometimes irregular, but more usually circular or somewhat oval

In reactions of greater severity than the last an outer halo of faintly red discolouration was distinctly visible, much less intense than the inner red area and of varying size, though rarely extending for more than a quarter of an inch from the central denser area, except where it tapered out into a filamentous projection or projections which marked the radiation of a lymphatic channel

Finally, when the reaction was most intense the marked red area immediately about the scar became paler and more livid adjacent to the crater and sometimes assumed a purplish hue This appearance marked the maximum reaction noted It was characterised by four distinct zones —a depressed scar in the centre, bordering this a livid pink or purplish zone, surrounding the latter a well marked zone of intense redness, and, embracing the last, a faintly pinkish area, the outer limit of which was indefinite and merged into the surrounding skin, being sometimes prolonged for a shorter or longer distance into radiating lymphatics

As was to be expected, the degree of reaction generally varied with the strength of solution of tuberculin, stronger solutions provoking a more intense reaction than weaker In some cases, however, particularly when inoculations were made on the thighs, the difference between reactions of a quarter and full strength were not marked, and occasionally the quarter strength solution appeared to cause a more intense reaction than the full strength This may possibly be partly accounted for by accidental inequality in the degree of scarification It was found that on approaching the groin the skin was less tense and rested on a less firm foundation than on the middle region of the thigh With equal pressure the scar made by the scarifier in the groin region did not penetrate so deeply in the looser skin as the scar made on the firmer skin in the middle of the thigh

Hence it is conceivably possible that a weaker solution of tuberculin inoculated into the skin of the middle of the thigh might cause a greater reaction than a stronger solution inoculated into the skin of the groin

General Reaction

To ascertain if any general reaction followed the employment of this test the temperature in each of the cases investigated was taken every two hours for the first 48 hours and every four hours for the succeeding 48 hours, subsequently the usual morning and evening temperatures were alone taken, unless for any reason it was found desirable to take the temperature more frequently Subjective symptoms were also very carefully noted

In the great majority of cases, except for a fractional rise of temperature there was no evidence of any general reaction whatever Often not even a slight rise of temperature was observed [4]

In six cases only did the temperature rise up to or above 100° F where the raised temperature could be ascribed to the test This rise was always on the day succeeding the inoculation In three of these cases the patients complained of headache and general malaise These symptoms always rapidly disappeared and in only one case did the headache persist throughout the day following the inoculation

General reaction, when present, was only noticeable on the day succeeding the application of the test

In one (R T No 74) of these six the temperature rose to 100° F on the afternoon succeeding the day of inoculation, and the patient complained of slight headache

In another case (N R, No 80) the temperature rose to 101 4° F on the afternoon following the day of inoculation Patient looked flushed complained of headache, and vomited undigested food once

In the case where the general reaction was most marked (M B, No 9) the test was applied at 7 P M on August 26th,

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[4] Care was taken where possible to test only apyrexial patients In very few cases was there any pyrexia due to complicating sepsis or other cause

1914 The next morning the patient looked ill the eyes were sunken, face drawn and flushed, and the child was very quiet There was slight erythema on the chest, abdomen and back, the temperature was 100·5° F, and the patient complained of feeling ill and having headache At 3 P M the temperature was 103·4°, cheeks more flushed, headache intense, and patient drowsy In the evening the temperature went down the headache was relieved, and the rash disappeared The patient slept well at night and the next morning he was bright lively, with no headache and no discomfort, his temperature was normal and he appeared quite well

In this patient the local reaction was more intense than in any of the others in the whole series He was a fair skinned red haired boy It is probable that these symptoms were not the result of the test but due to other and unascertained causes This was the only case in which the general reaction could be called severe

In the remaining three cases a temperature rising to 100° F was alone noted In no case did the general reaction extend beyond the day following the inoculation

It should be remembered that the patients tested were children and not able to describe symptoms clearly, but they were kept in bed under close observation and no evidence could be found of general reaction more intense than stated above

In no cases were any ill effects observed other than the transient ones exceptionally occurring and already recorded and these apparently need not be anticipated if not commencing within 24 hours of the inoculation

Local Reactions to Human and Bovine Tuberculin

The local reactions to human and bovine tuberculin were found to be essentially similar, and, without the knowledge that the one tuberculin was always inoculated on the right side and the other on the left it would have been impossible to decide whether any one reaction was due to human or bovine tuberculin

While variations in the degree of the local reactions between one patient and another were frequently marked, it was the exception to find considerable variation in degree between the reactions to human and bovine tuberculin in any one patient Out of the 80 cases investigated in 23 the reactions to human and bovine tuberculin were so nearly equal that it was impossible to decide which was the greater In 21 cases the reaction to human tuberculin was slightly greater than to bovine In 25 cases the reaction to bovine tuberculin was slightly more marked than to human In four cases the reaction to human tuberculin was markedly greater than to bovine In seven cases the bovine reaction was markedly greater than the human. (see Table)

Comparison of Results obtained by Von Pirquet Test with Bacteriological Findings

Reactions	No of cases	Bacteriological findings			
		Human	Bovine	Atypical	Negative
Approximately equal	23	16	5	1	1
Slightly greater to human tuberculin	21	13	8	—	—
Slightly greater to bovine tuberculin	25	14	6	1	4
Markedly greater to human tuberculin	[illegible]	2	1	—	1
Markedly greater to bovine tuberculin	7	5	2	—	—
Totals	80	50	22	2	6

Relation of Degree of Reaction and Severity of Disease

No definite relationship could be established between the degree of the reaction and the severity of the disease

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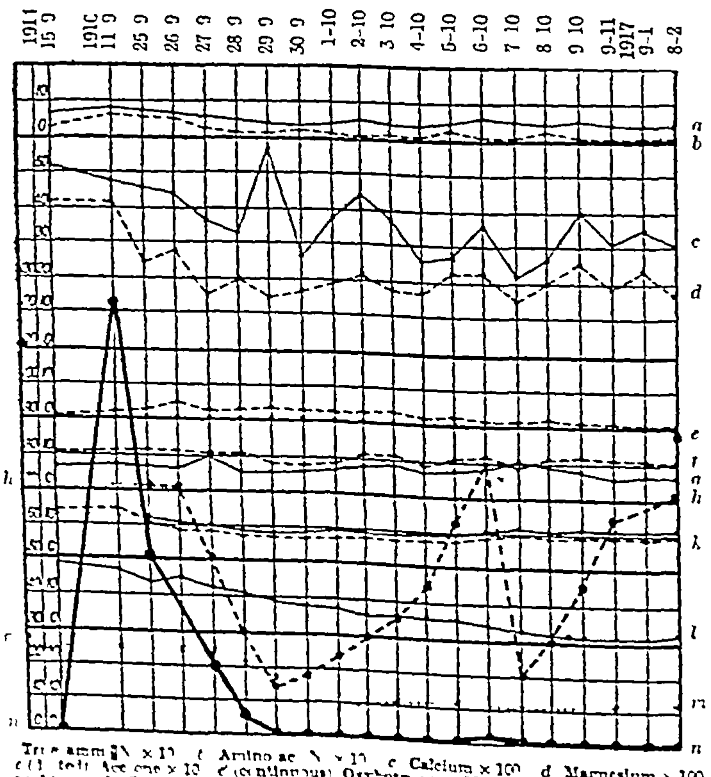
The outlook for patients with a cirrhotic pancreas is usually fairly good, provided that a suitable diet is arranged as soon as possible after the discovery of the disease. I have not found that they are materially benefited by the starvation treatment and, as their digestive powers for all three classes of foodstuffs are deficient, the indications are rather to ensure sufficient nourishment than to worry unduly over the comparatively unimportant defect in carbohydrate metabolism

Strictly speaking the true hepatic type does not come under the heading of diabetes, for, although the urine reduces Fehling and Benedict s solution, &c., and gives an osazone with phenylhydrazine similar to that of dextrose, this is not due to the presence of a sugar but to an alphaketonic acid to which I have given the name "iso-glucuronic acid ' although it is more convenient to refer to it as pseudo-lævulose, since like lævulose, it is lævorotatory Pseudo-lævulose is met with in the urine of most advanced cases of diabetes along with dextrose, especially if the diet contains much protein, for it is from protein that it is probably derived, but it may also occur alone and lead to an incorrect diagnosis of diabetes To treat such cases on orthodox lines may do more harm than good The ordinary carbohydrate free diet only makes matters worse, and although starvation will clear the urine of reducing substances, the same result may be obtained, with much greater comfort to the patient, by eliminating, or strictly limiting, the protein in the diet and giving an abundance of vegetables, with dextrinised starches, in the form of oatmeal, potato &c , or pure dextrose Under this treatment the urine rapidly becomes normal, and after a few weeks the patient can gradually resume his ordinary food, provided that protein is taken sparingly So far as I can see at present the prognosis seems to be good for I have several patients who have remained sugar free and in excellent health for three or four years It seems probable that some of the success of the various carbohydrate " cures " for diabetes is to be explained by cases of this kind

CHART 1.

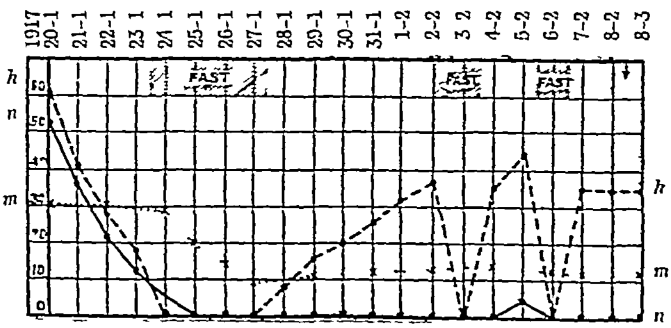


[illegible] ammon N × 10 b Amino ac N × 10 c Calcium × 100 d Magnesium × 100 e (?) total Acetone × 10 e (continuous) Oxybutyr ac × 10 f Creatinine × 10 g Uric ac N × [illegible] h Food carbohyd i Total ur N k Food N l Indican × [illegible] m Blood sugar × 100 n Urinary sugar

The Pancreo-Hepatic Type " Gouty " Glycosuria

In what I have termed the pancreo-hepatic type there may, or may not, be evidence of intestinal catarrh at the time they come under observation, but they always show signs of pancreatic insufficiency and more or less disturbance of the functions of the liver most likely the result of an infection from the intestine by way of the ducts or lymphatics The relative importance of the two conditions varies considerably and they merge into the pancreatic type in the one direction and into the hepatic on the other There is a corresponding difference in the probable course of the case

CHART 2



and the form of treatment most likely to be of benefit The prognosis is most hopeful when hepatic insufficiency is the more prominent feature such cases corresponding to what has been termed gouty glycosuria " Typical attacks of gout are very rarely seen however, but they are specially liable to what are termed ' gouty " complications in the shape of cardio-vascular or kidney disturbances, neuralgia, and neuritis, the last two being the most common and severe In reality these complications are dependent on the hyperglycæmia for they persist so long as there is an excess of sugar in the blood It is important to remember in this connexion that the disappearance of sugar from the urine does not necessarily imply a normal blood-sugar content, in fact it is the rule for the hyperglycæmia to continue after the urine is sugar free, so that if reliance is placed on analysis of the urine alone anti-diabetic treatment may apparently fail to control the symptoms

Pseudo-lævulose is generally present in these cases sometimes constituting more than half the total sugar Systematic examination of the urine usually shows, in addition striking variations in the excretion of uric acid and creatinine, which moves in curves with several days' or weeks' interval between the crest and trough of the waves Amino-acids are frequently present in considerable excess and an abnormal output of urobilin is a common feature The fæces may have the characters associated with catarrh of the upper intestine, but it is more common to find signs of chronic colitis

In some a short period of starvation is helpful, but I have obtained the best results by merely limiting the carbohydrate and protein for several days then giving one or two vegetable days followed occasionally by a porridge or potato day The subsequent diet is arranged according to the patient s tolerance for carbohydrate and protein, determined by regular blood and urine analyses In many instances an alternating diet arranged so as to control the pancreatic and hepatic insufficiency in turn is the most satisfactory

Typical ' gouty ' glycosuria is most common after middle life but even in younger people a predominance of the signs of hepatic insufficiency warrants a more cheerful outlook than when they are absent The tendency for the hyperglycæmia to persist after the disappearance of the glycosuria should be borne in mind if the treatment is to be really satisfactory, however

THE NEW DIETETIC TREATMENT OF DIABETES[1]

By P J CAMMIDGE, M D Lond

Treatment by Fasting

It is now many years since it was first suggested that patients suffering from severe diabetes should be starved until their urine became sugar free, but the suggestion was not generally adopted, as it was found that an alarming increase in the excretion of acetone bodies often occurred when the fasting had proceeded for a short time Acting on the experience gained with animals rendered more or less diabetic by partial removal of the pancreas, Allen gave a further trial to the method and found that, in the majority of cases, the acidosis which is apt to develop during the first few days of starvation subsides afterwards if the fasting is persevered with As a result he formulated a plan of treatment which may be summarised briefly as follows —

1 A preliminary fast is given until the urine is free from sugar

2 When it has been sugar free for 24 hours carbohydrate food is allowed in gradually increasing amounts, starting with green vegetables

3 Coincident with the addition of carbohydrate, or in place of it if the carbohydrate tolerance is very low, protein is introduced into the diet, in small but gradually increasing quantities, until glycosuria occurs, or a sufficient amount is being taken to cover the basal requirement of the patient

4 Fat is added to the diet in small quantities during the time the carbohydrate and protein tolerance are being tested, and is subsequently increased more rapidly until the fuel requirements of the body are met, provided that glycosuria does not develop and there is no increase in the acidosis

5 The appearance of sugar in the urine at any time is taken as an indication that a fast of sufficient length to cause a cessation of the glycosuria is necessary

6 A diet containing not more than half the carbohydrate being taken at the time sugar appears is then continued with for some weeks Later further additions are made very gradually

7 At intervals, depending on the severity of the case, the patient fasts, or greatly restricts the whole level of his diet, for 24 hours

8 Adult patients are not allowed to gain in weight, but a natural increase is allowed in children, although care is taken that the gain should not be in adipose tissue

9 Active daily exercise, carried to the point of healthy fatigue, is insisted on in all cases if possible

The details of the method necessarily vary somewhat according to the character of the case, as Allen himself has pointed out, although few of his disciples seem to be aware of the fact I do not propose to consider them here, however, but shall devote my attention mainly to the metabolic changes produced by the treatment and its effect on different types of glycosuria

Chronic Intestinal Catarrh

Everyone who has had more than a very limited experience of the condition to which the name diabetes mellitus is generally applied cannot avoid coming to the conclusion that it occurs in a variety of forms, with the one symptom of glycosuria in common, but differing widely in other respects This variation is even more marked when the blood, urine, and fæces of a number of cases are systematically investigated and compared During the last few years I have had the opportunity of making analyses of some 8 000 specimens from over 500 cases of diabetes, including 54 whom I have treated by Allen's method One of the most striking results of my investigations has been the frequency with which indications of a chronic catarrh of the upper part of the intestinal tract have been met with, such a condition being present in 71 per cent of my cases One can hardly assume that the relationship is accidental, or that the catarrh is a secondary phenomenon for the history very frequently shows that heartburn, flatulency, and other symptoms of indigestion preceded the discovery of sugar in the urine, often by several years while I have found that treatment directed to the intestinal condition frequently helps to control the glycosuria, whereas reappearance or accentuation of the catarrh may be followed by increase in the sugar excretion Cases of this description generally respond well to alimentary rest, but they are liable to relapse unless the intestinal condition is considered in the subsequent treatment.

The fasting treatment is based on the assumption that impairment of the functions of the pancreas is the cause of glycosuria in all cases and that the improvement in carbohydrate metabolism which results is due to the physiological rest given to the gland Although this may be true to some extent in cases with a chronic intestinal catarrh, it is probable that the starvation also has an effect on the intestinal condition, and that this helps to control the glycosuria. It may be a de-intoxicating process, as Guelpa supposed, but as Lombroso has recently shown that the intestine yields a glycolytic agent to the blood even more readily than the pancreas, it is possible that the physiological rest may influence the production of this substance, and so improve the utilisation of sugar At any rate, the analogy between the diabetes produced in animals by partial extirpation of the pancreas and in the human subject is probably not always as close as there has been a tendency to assume, since on the one hand we are dealing with a surgical mutilation of a non progressive character whereas on the other we have to treat a pathological state that tends to progress, and, even when checked, to recur

I could quote a number of cases to illustrate the relationship between the condition of the intestine and the progress of diabetes, but one will suffice —

A lady 26 years of age was sent to me at the beginning of August 1916 with the history that a month before she had begun to feel thirsty and was easily tired. As the symptoms increased she saw her doctor who found sugar in her urine and wrote to me for an appointment When she came I examined her blood and found 0 24 per cent of sugar while a specimen of urine she brought with her contained 6·2 per cent. giving a total excretion for the 24 hours of 124 gm Later on a test diet containing 3½ oz of bread and with a total carbohydrate content of 70 gm she passed 52 gm of sugar in the 24 hours The urine also contained 300 mg of acetone bodies but no oxybutyric acid 760 mg of ammonia nitrogen 450 mg of calcium 230 mg of magnesium and showed a normal creatinine and uric acid excretion and a normal nitrogen balance There was a very marked reaction for indican which worked out quantitatively at 128 mg The fæces were dark brown in colour rather soft in consistency, acid in reaction and gave a very marked reaction for biliverdin but contained no occult blood The trypsin index was slightly subnormal 200 units but there was no evidence of serious interference with fat digestion or absorption

This patient was not starved, as the glycosuria and hyperglycæmia quickly cleared when the carbohydrate intake was limited, and means were taken to combat the intestinal condition As the latter improved the diet was gradually increased, until ultimately 70 gm of carbohydrate were again being taken, but without there being any sugar in the urine The main interest of the case lies in the fact that the patient had consulted me two years previously for chronic indigestion, when there was no trace of glycosuria Her urine then contained a marked excess of indican, 188 mg , there was a high iodine coefficient (" pancreatic reaction) of 248 units, and an abnormal amylolytic ferment index of 67 units The fæces were at that time strongly acid in reaction, contained a considerable amount of unchanged bile pigment, and gave an abnormally high trypsin index of 5000 units Quantitative analysis showed a relative excess of combined fatty acids and a very low proportion of neutral fat There was evidently, then, very considerable catarrh of the upper part of the intestinal tract, with secondary catarrhal pancreatitis, and in a letter to the patient's doctor I pointed out the possibility of diabetes supervening if the condition progressed, as, unfortunately, it appears to have done (Chart 1)

Classification

It is comparatively uncommon, in my experience, to find evidence in the urine and fæces of advanced cirrhosis of the pancreas in diabetics As a rule a cirrhotic or malignant, pancreas is associated with only traces of sugar 5 gm , or less, in the 24 hours and it is rare also to meet with acetone or signs of acidosis even when as occurs exceptionally, the sugar excretion rises to 50 or 100 gm a day

Signs of some interference with the digestive functions of the pancreas were found however, in the majority of my cases (72 per cent) and in most of them (67 per cent.) there were indications that the functions of the liver were also being imperfectly carried out In some 27 per cent. the hepatic disturbance was apparently more pronounced than the pancreatic

It is consequently convenient to recognise three types (1) the pancreatic (2) the hepatic, and (3) the pancreo-hepatic—a classification I find of considerable help in prognosis and treatment

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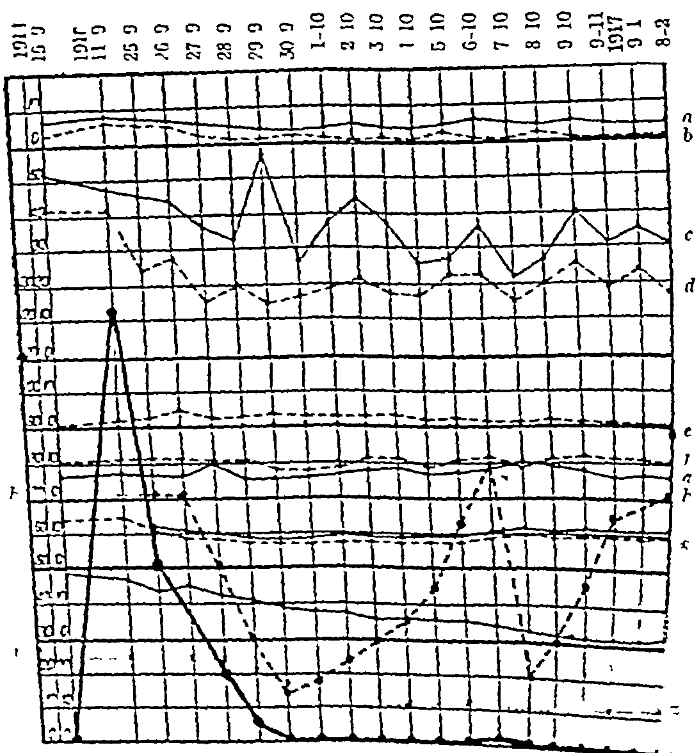
[1] A paper read before the Harveian Society on April 19th 1917

The outlook for patients with a cirrhotic pancreas is usually fairly good provided that a suitable diet is arranged as soon as possible after the discovery of the disease. I have not found that they are materially benefited by the starvation treatment, and, as their digestive powers for all three classes of foodstuffs are deficient, the indications are rather to ensure sufficient nourishment than to worry unduly over the comparatively unimportant defect in carbohydrate metabolism.

Strictly speaking, the true hepatic type does not come under the heading of diabetes, for, although the urine reduces Fehling and Benedict's solution, &c. and gives an osazone with phenylhydrazine similar to that of dextrose, this is not due to the presence of a sugar but to an alphaketonic acid to which I have given the name "iso-glucuronic acid," although it is more convenient to refer to it as pseudo-lævulose, since, like lævulose, it is lævorotatory. Pseudo-lævulose is met with in the urine of most advanced cases of diabetes, along with dextrose, especially if the diet contains much protein, for it is from protein that it is probably derived, but it may also occur alone and lead to an incorrect diagnosis of diabetes. To treat such cases on orthodox lines may do more harm than good. The ordinary carbohydrate free diet only makes matters worse, and, although starvation will clear the urine of reducing substances, the same result may be obtained, with much greater comfort to the patient, by eliminating, or strictly limiting, the protein in the diet and giving an abundance of vegetables with dextrinised starches, in the form of oatmeal, potato, &c., or pure dextrose. Under this treatment the urine rapidly becomes normal and after a few weeks the patient can gradually resume his ordinary food, provided that protein is taken sparingly. So far as I can see at present the prognosis seems to be good, for I have several patients who have remained sugar free and in excellent health for three or four years. It seems probable that some of the success of the various carbohydrate "cures" for diabetes is to be explained by cases of this kind.

CHART 1.

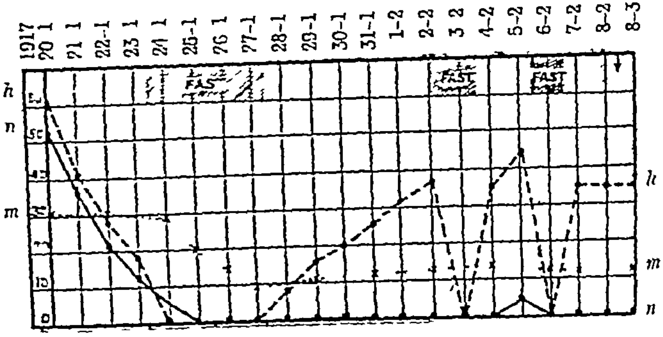


True ammonia N × 10 [illegible] Amino ac. N × [illegible] Calcium × [illegible] Oxybutyric ac. [illegible] Food [illegible] Urinary sugar [illegible]

The Pancreo-Hepatic Type: "Gouty" Glycosuria.

In what I have termed the pancreo-hepatic type there may, or may not, be evidence of intestinal catarrh at the time they come under observation, but they always show signs of pancreatic insufficiency and more or less disturbance of the functions of the liver, most likely the result of an infection from the intestine by way of the ducts or lymphatics. The relative importance of the two conditions varies considerably and they merge into the pancreatic type in the one direction and into the hepatic on the other. There is a corresponding difference in the probable course of the case and the form of treatment most likely to be of benefit. The prognosis is most hopeful when hepatic insufficiency is the more prominent feature, such cases corresponding to what has been termed "gouty glycosuria." Typical attacks of gout are very rarely seen, however, but they are specially liable to what are termed "gouty" complications in the shape of cardio-vascular or kidney disturbances, neuralgia and neuritis, the last two being the most common and severe. In reality these complications are dependent on the hyperglycæmia, for they persist so long as there is an excess of sugar in the blood. It is important to remember in this connexion that the disappearance of sugar from the urine does not necessarily imply a normal blood-sugar content; in fact, it is the rule for the hyperglycæmia to continue after the urine is sugar free, so that if reliance is placed on analysis of the urine alone anti-diabetic treatment may apparently fail to control the symptoms.

CHART 2.

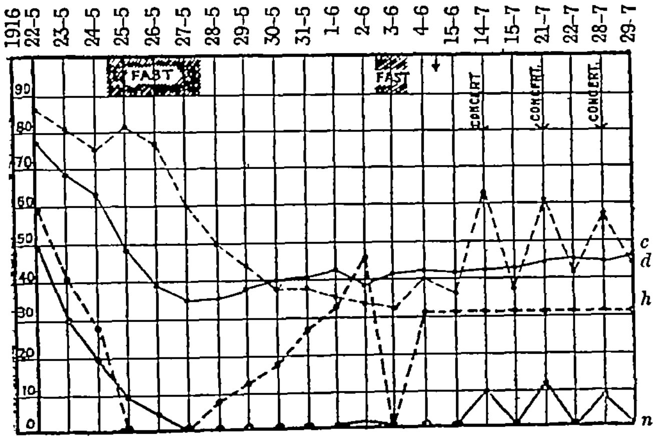


Pseudo-lævulose is generally present in these cases, sometimes constituting more than half the total sugar. Systematic examination of the urine usually shows, in addition, striking variations in the excretion of uric acid and creatinine, which may rise and fall with several days' or weeks' interval between the crest and trough of the waves. Amino-acids are frequently present in considerable excess, and an abnormal amount of [illegible] is a common feature. The fæces may have the characters associated with catarrh of the upper intestine, but it is more common to find signs of chronic colitis.

In some a short period of starvation [illegible] helpful, but I have obtained the best results by [illegible] limiting the carbohydrate and protein for several days, then giving [illegible] [illegible]

I have recently had under my care a case of this type in a young woman of 28 who had been twice treated by alimentary rest by different physicians with apparently satisfactory results at the time, but on each occasion sugar reappeared in her urine within a short period of her return home I found that as on previous trials, the urine became sugar free after two days starvation but examination of her blood showed that it contained 0·2 per cent of sugar as compared with 0 29 per cent before she was deprived of food and 0 3 per cent when she first came under observation It was not until she had starved for another two days that it dropped to 0·09 per cent. The patient went home with a new diet scheme and has remained sugar free for a month, while her blood sugar has not risen higher than 0 13 per cent (Chart 2)

CHART 3



Experiences of this sort bring home to one the necessity for controlling examination of the urine for sugar by analysis of the blood, and emphasise the fact that the aim of our treatment of diabetes should be to prevent hyperglycæmia, not merely to eliminate sugar from the urine So long as blood sugar estimations were difficult to carry out there was a valid excuse for our relying entirely on urinary analysis, but the modern micro chemical methods[2] require so little material and are so readily performed that we should no longer be "content with the shadow, but grasp at the substance "

The Nervous Factor

There can be no doubt that there is a nervous factor in many cases of diabetes although it is rarely possible to prove it I am inclined to think that the relation between the calcium and magnesium output in the urine may afford some indication, for I have found that the latter is usually higher than the former in nervous people, and on several occasions I have seen a sudden rise in the magnesium excretion, with little or no change in the calcium as the result of nervous disturbances or injury

Cases in which a nervous element is probably present answer well to alimentary rest, but always do best when treated away from home and their ordinary surroundings, owing probably to the mental effect of the change in environment I urge these patients to take as much fresh green vegetable as possible because of the inorganic salts they contain, and I find that minute doses of magnesium sulphate three or four times a day tend to steady their nervous system and consequently control the glycosuria Purgative doses should be carefully guarded against, however

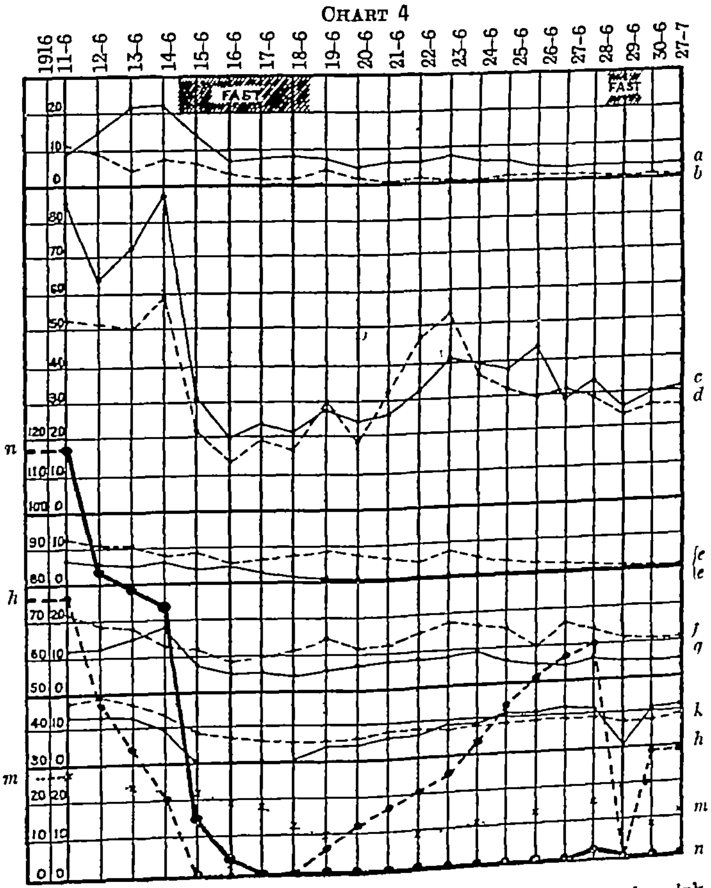
One of the most striking examples of the influence of nervous excitement on sugar excretion I have met with was in a musician who came under my care last year Originally he excreted about 50 gm a day but became sugar-free after three days and four nights of starvation the blood sugar coming down to normal next day On the diet that was eventually worked out for him he remained sugar-free for over a month Three days after he returned to work he passed 10 gm of sugar although no change had been made in the diet and the next day's specimen was sugar-free The same thing happened the following week and I then found that on each occasion he had taken part in a concert and had been particularly affected by the music. So as an experiment I asked him to attend another of the same series of concerts, with the result that he again passed sugar in his urine He has since confined his activities to less exciting work and has had no return of the glycosuria. (Chart 3)

Questions in Regard to Advising Fasting

From what I have said it will be gathered that I do not look upon Allen's fasting treatment as the best for all forms of glycosuria, although I consider that it marks a great advance in the available methods and gives results which can be obtained by no other means in many instances It should be used with judgment however, and one should always bear in mind that the keynote of the treatment is under nutrition. A practical question that sometimes arises therefore, is whether a controlled, and may be a mild glycosuria, with an adequate diet and reasonable enjoyment of life, is not preferable to the theoretical ideal of a permanently sugar free urine, which can only be obtained by a diet that will not satisfy the pangs of hunger and requires constant close supervision? The answer will depend on circumstances and the temperament of the patient These should be considered carefully before advising the treatment, especially as, once it is begun, it must be continued, for as I pointed out in an article last year,[3] the return to an ordinary carbohydrate free diet almost inevitably brings about a rapid increase in the acidosis, with excessive tissue waste and death from coma.

That such should be the case is not difficult to explain Daily analysis of the urine during the fasting period shows that coincident with the fall in the sugar excretion there is a drop in the whole level of metabolism, the total nitrogen sinking until it stands at a steady level of 4 gm or 5 gm a day At first there may be a rise in the output of uric acid and creatinine, but as the fasting proceeds they also sink and the same is true of the amino acids A most striking change generally occurs in the acidosis At first this, as shown by the total acidity, ammonia nitrogen calcium, and

CHART 4



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[2] THE LANCET April 21st, 1917, p 613

[3] Practitioner 1916

magnesium, may rapidly increase, and there is a corresponding rise in the excretion of acetone bodies Sometimes the oxybutyric acid output is also increased temporarily but often it falls from the first day, and is replaced by a larger excretion of acetone and aceto acetic acid Ultimately these also begin to clear, although some acetone may be excreted for a considerable time Finally the ammonia, calcium, and magnesium, with the total acidity, reach normal levels, and the urine may afterwards become alkaline as vegetables are taken After feeding is commenced, and particularly when protein foods are introduced into the diet, the total nitrogen rises again, but if the dieting is properly carried out the patient remains in nitrogenous equilibrium, and there is no increase in the acidosis (Chart 4)

Supposing now that a patient in this condition is suddenly transferred to a "carbohydrate free" diet, the immediate effect of the largely augmented protein intake is to stimulate metabolism some 50 per cent or more over what it would have been had the same caloric value been given in the form of carbohydrate, with the result that there is rapid tissue waste, with a greatly increased excretion of amino-acids, uric acid, creatin, and creatinine, a rise in the formation of acid bodies, and consequently increasing depletion of the alkaline reserves of the body, which are no longer being replenished by the bases contained in the vegetables that previously constituted so large a part of the diet More fat and less carbohydrate are also being taken, so that the products of the imperfect combustion of fat are increased and added to the total acid bodies, still further depleting the alkaline reserves in the organism Choked by the accumulated "clinker" of a diet it is incapable of metabolising, and worn out by the attempt to utilise its own tissues as a source of energy, the body soon becomes unable to carry on its work and the patient dies of diabetic coma

Acidosis

Formerly the most common cause of death in diabetes, coma should now be one of the rarest, for in starvation, followed by a largely vegetable diet, we have a powerful weapon for preventing and controlling the acidosis from which it arises Essentially, acidosis results from the imperfect oxidation of fat and this in its turn is dependent upon the faulty combustion of carbohydrate by the body, for fat seems to be a less readily oxidised foodstuff than sugar and needs the fire of burning sugar to bring about its complete combustion It has been calculated that one part of dextrose to three parts of higher fatty acids is required for the purpose If less than this proportion is available the fat "smokes," as it were the smoke being represented in the body by abnormal acid products Since the maximum rate at which dextrose can be oxidised by the diabetic is always lower than in health, the diabetic is not capable of completely utilising as much fat as a normal individual, so that acidosis is more prone to develop

In order to check a diabetic acidosis it is necessary to restore the proper relation of fatty acid to dextrose oxidation, which may be done by diminishing the fat in the body and increasing the power to utilise carbohydrate Fasting will obviously ensure the former, and it is well known that it also tends to increase carbohydrate tolerance, so that abstinence from food is the most rapid method of restoring the required balance The immediate result of starvation will depend however, on the amount of fat stored in the tissues and therefore on the nature of the previous diet If a diet rich in fat has been taken and there is a considerable deposit of adipose tissue the sugar available may be quite inadequate to ensure anything like complete combustion, and there will consequently be a rapid rise in the acidosis until the fat has been used up and a more normal relationship has been reached but even then the acidosis may continue to increase, for proteins contain fatty acid radicals yielding acid bodies when they are imperfectly oxidised and some diabetics have lost the power of utilising more than a small proportion of the dextrose contained in the protein molecule which normally serves for their combustion By persisting with the starvation the ability of the organism to utilise carbohydrate usually becomes so far restored that enough is available to control the formation of abnormal acid end products from both sources

Some Practical Conclusions

From a consideration of these facts it is obvious that all cases of diabetes cannot be expected to react to starvation in the same way the determining factors being the amount of stored fat the power to utilise the carbohydrate deposited in the form of glycogen, and the extent to which sugar of protein origin can be made use of Hence three practical conclusions may be drawn —

1 There is more danger of serious acidosis developing during starvation in fat than in thin diabetics

2 When acidosis is present the patient should be prepared for the starvation treatment by being put on a fat poor diet for several days before abstinence from food is commenced

3 An initial increase in the acidosis is to be expected, but should not stop the treatment unless it assumes threatening proportions, as it will most likely subside if the fasting is persisted with

Occasionally nausea, marked prostration, increasing drowsiness, and deep breathing, in conjunction with the characteristic changes in the composition of the blood, alveolar air, and urine, indicate a severe and progressive acidosis The fast should then be terminated for the time being and the treatment directed to the acidosis A restricted diet, consisting chiefly of green vegetables, with alkaline therapy, for a few days will generally suffice to control the condition, and a further fast will then usually result in improved carbohydrate tolerance and a sugar-free urine without increasing the acidosis

During the fasting periods weak patients should be kept in bed, but the more vigorous should be encouraged to take as much exercise as is practicable, since the duration of the fast is shortened thereby After feeding is commenced regular exercise should be continued, and even weak patients should have massage or regulated exercises Short periods of vigorous exercise are to be preferred to long monotonous walks, and are particularly advantageous immediately following a meal containing carbohydrate, but care should be taken to avoid excessive fatigue Exercise is of especial benefit for children, as it promotes the building of active tissue at the expense of fat and favourably influences growth Mental occupation is most desirable, and patients should be encouraged to continue their ordinary work as far as possible

The Protein Intake

Long before the appearance of Allen's work I had come to the conclusion that quantitative regulation of the diet is necessary in all cases of glycosuria and that control of the protein intake is quite as important as adjustment of the carbohydrate for the exhaustive chemical analyses of the excreta carried out in most of my cases showed that merely eliminating sugar from the urine does not suffice to control the disease if the patient is not in nitrogenous equilibrium, and that the only way to maintain this condition is to teach him to take his diet quantitatively A number of papers published between 1912 and 1915 embodied these conclusions, and it is therefore gratifying to find that they are important features of Allen's plan, although I regret to see that in the attempt to simplify the treatment a rule-of-thumb method for establishing a nitrogenous balance is generally advocated instead of the more laborious, but certain, determination by direct chemical analysis

Systematic examination of the urine shows that when the protein in the diet of a diabetic is gradually increased beyond a certain point varying with each case, evidences of a disturbance of nitrogenous metabolism appear before sugar can be demonstrated in the urine and that if these are at once recognised and the protein cut down glycosuria can be prevented Merely to rely upon the appearance of sugar in the urine is therefore far from being an ideal method of regulating the treatment My experience with several patients who have come under my care after treatment with alimentary rest by others has confirmed my distrust of this "hit or miss" process of determining the protein tolerance

As an example I may quote the case of a young man who consulted me in the beginning of January He had been treated in the previous November by a physician who has copied Joslin's method of applying the fasting treatment and stated that after a 24 hours fast his urine had been found to be free from sugar His final diet on which he had remained sugar free according to Fehling's test contained 60 gm of carbohydrate and 16 gm of protein with as much fat as he cared to take He complained that although he had strictly adhered to the quantities allowed he was steadily losing strength was exceedingly miserable, and suffered from frequent attacks of cramp

Temporarily continuing the same diet I found that a 24 hours specimen of his urine gave no reaction for sugar with Fehling and showed only a slight turbidity with Benedict's test while quantitative analysis gave just over 1 gm of sugar for the day Determination of the sugar-content of the blood showed 0·19 per cent two hours after the morning meal so there was evidently some hyperglycæmia. Further investigation of the urine revealed other important changes The total nitrogen exceeded the intake by more than 2 gm there was a very high uric acid output, the creatinine excretion was nearly double the normal the amino-acid nitrogen amounted to 200 mg a day the true ammonia was just over 1 gm and there were 140 mg of oxybutyric acid and 893 mg of acetone bodies besides an excess of calcium and magnesium After a few days on a fat-poor vegetable diet and one day of starvation, the blood sugar fell to 0·06 per cent the total nitrogen of the urine dropped to 5 gm., the oxybutyric acid disappeared and the uric acid creatinine ammonia nitrogen calcium and magnesium excretions fell to normal, while only traces of amino-acids could be found His diet was then gradually worked up again guided by the results of daily complete analyses of the urine and blood sugar estimations when it was found that although his carbohydrate tolerance still stood at about 60 gm. he could only be kept in nitrogenous equilibrium and his blood sugar maintained at normal figures if the nitrogen intake did not exceed about 10 gm a day With a diet containing these amounts and a specified quantity of fat he became more cheerful ceased to lose weight, and no longer suffers from cramp

I need not discuss in detail the adjustment of the carbohydrate content of the diet to the patient's tolerance, as provided he is kept in nitrogenous equilibrium, it is a comparatively simple matter, although I should again like to emphasise the importance of controlling the urinary analysis by examination of the blood In passing I may also remind you that the carbohydrate and protein in the diet of a child should not be increased at the same rate as in an adult, but proportional to the weight, 1 gm of carbohydrate for a child of 15 kg, for instance, being about equal to 4 gm for an adult

The Fat Intake

The regulation of the fat intake in diabetes requires much more care than is frequently given to it Hitherto fat has generally been regarded as a "make weight" by which the caloric value of the diet can be adjusted to the theoretical requirement worked out from the patient's weight, but modern research suggests that this idea, like that formerly held with regard to proteins must be abandoned, and that careful control of the fat-supply is no less important than a correct adjustment of the protein and carbohydrate intake

It is still a debatable point whether sugar can be derived from fat, but apart from this the recent experimental work of Allen on dogs has shown that restriction of the carbohydrate and protein in the diet alone only serves to suppress the symptoms temporarily and that unless the total metabolic load on the weakened assimilative functions is lightened by keeping the fat also within strict limits, downward progress, similar to that often seen in the human subject, occurs The observations of Bloor on the blood have likewise demonstrated that defective fat metabolism is much more common in diabetes than has been supposed, for he found that abnormal lipoid values occur very frequently, apart from obvious lipæmia Bloor showed that these lipoids originate from the fat of the food, an increase leading to an accumulation of fat and its metabolites in the blood until a point is reached when they can be no longer held in solution by the plasma, while fasting and a reduced fat intake have the opposite effect and bring about more efficient metabolism There appears to be no definite relation between the lipoid content of the blood and the excretion of acetone bodies in the urine, however Regular determinations of the lipoids in the blood would no doubt afford the best guide to a correct adjustment of the fat content of the diet and prevent overloading of the faulty mechanism, but the process is too long and complicated for routine clinical work at present and one has to fall back upon such rough tests as the appearance of the blood and changes in weight

I have already indicated the importance of not commencing the fast in severe cases with acidosis until the patient has been prepared by a few days on a fat poor diet, but it is equally important that fat should not be added to the diet subsequently until a considerable tolerance for carbohydrate and protein has been established Eggs are therefore often not the best form of protein to start with, as is usually advised A creamy blood an increase in the ketonuria, or the appearance of sugar after more fat has been introduced into the diet should be controlled by reducing the fat intake, otherwise it is best so to regulate the diet that a progressive loss of weight is prevented while a gain, or rather an increase in adipose tissue, is avoided

Periodical Curtailment of Diet

Even when the total caloric value of the diet and the body mass have been reduced to correspond to the defective assimilative capacity of the patient there is a risk that his metabolic powers may still be over taxed if they are constantly worked at the same level It is therefore advisable that the diet should be materially curtailed at regular intervals The extent of the reduction and the frequency with which it is required will depend upon the severity of the case and the response to the preliminary treatment so that no hard and fast rule can be laid down, but generally an all round reduction by one half for one day each week is required. In some cases this means that the patient must fast, in others that he is limited to low value green vegetables, maybe with two or three eggs, while in others again a fair amount of carbohydrate food can be taken provided that the fat and protein intake are kept low When carbohydrate tolerance is very defective it may be advisable to prescribe one or two vegetable days in addition.

As the patient improves his allowance of carbohydrate is gradually increased, and the stringency of his fast, or semi fast, days reduced, but he must advance a step at a time with sufficient interval between each to test thoroughly hi powers of dealing with the larger ration The protei allowance in any case should aim at the standard o Chittenden rather than that of Voit, and no addition shoul be made, under any circumstances, until the patient ha been in nitrogenous equilibrium for several weeks and al traces of acetone bodies have disappeared from the urine even then it should be increased very cautiously guided by the relation between the nitrogen content of the diet and the output in the urine In this connexion I may point out tha many so-called diabetic foods and breads, if not fraudulen as regards their carbohydrate content, consist chiefly o protein, which must be allowed for when they are used A ordinary bread is rarely well tolerated by diabetics, som substitute of this description is often most useful, but should never be given unless its carbohydrate, protein, an fat content are known and its composition is reliable

Acid-Base Equilibrium

I should have liked to consider in detail a subject which I have recently devoted considerable attentio namely, the influence of the inorganic salts of the die and particularly the alkaline bases, on metabolism diabetes, but a brief reference must suffice at presen Incidentally I have referred to one aspect of the matt when speaking of nervous disturbances, and it is needle to remind you of the importance of alkalies in treatu acidosis, but there are other problems involved th these Experiment has shown that the mechanism regul ing the level of the blood sugar is peculiarly sensitive disturbances in the acid base equilibrium of the body, ac production leading to hyperglycæmia, while alkalosis exe an opposite influence Since meats and cereals are general acid producing foods, while vegetables and fru usually yield an excess of bases, a diet rich in protein w tend to raise the sugar content of the blood, whereas vegetable diet will lower it May this not be one of t reasons why the largely vegetable diet usually given aft the fast in the alimentary rest treatment is associated wi an increase in carbohydrate tolerance, and a partial explan tion of the deleterious effect of more protein than is need for making good the actual wear and tear of the body [7]

Applying these ideas concerning the influence of the aci base equilibrium of the body on carbohydrate metabolism treatment, Murlin and Kramer and more recently Underhi have reported considerable improvement in cases of glyc uria subjected to careful alkaline therapy Underh employed large doses of sodium bicarbonate while Murl and Kramer used normal sodium carbonate, given int duodenally in 1 per cent solution That alkalies increa sugar tolerance is an old idea which has been under a clo for some years but old clinical beliefs often contain a ge of truth, and it seems that further research on these li may reveal methods of controlling glycosuria other th mere limitation of the diet

At present our only reliable means of combating the dise is management of the diet, but in order to obtain the b results and actually halt the diabetic process it is necess that it should be carried out with knowledge and as n discrimination as the selection and prescription of a dr Time and care devoted to the chemical aspect of each c render the task easier and would prevent the empir employment of one routine method so saving many patie from unnecessary hardships and inconveniences It is enough to consider only the glycosuria, or even the end products of metabolism in the urine, the information to be obtained from analysis of the blood and fæces should also be taken into account, and I venture to think that the time is coming and will come shortly, when a physician who attempts to treat a case of diabetes guided only by examination of the urine for sugar will be held as guilty of negligence as the present-day surgeon would be who failed to employ radiography when treating an injury of the bones or joints

Nottingham place W

THE LOCAL TREATMENT OF MENINGOCOCCUS CARRIERS WITH ANTISEPTICS

(A REPORT TO THE MEDICAL RESEARCH COMMITTEE)

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OWING to the measures adopted in the Navy to limit the spread of cerebro spinal fever a large number of carriers were detected in the Portsmouth depôt and isolated in a special camp It then became necessary to attempt to sterilise the throats of these men, and, although from analogy with other diseases the local application of antiseptics appeared likely to be unprofitable it was thought desirable to give these a trial If the antiseptic did not destroy the cocci in the throat, it was possible that it might prevent the cross-infection from one man to another Further, the use of inhaling rooms in the Army had been said to give encouraging results

In an experimental treatment of this sort there were three important matters to be considered (1) The antiseptic to be used , (2) the method of application , and (3) the index of cure

1 *The Antiseptics Used*

The antiseptics most thoroughly tested were chloramine T and acriflavine Dakin's new dichloramine compounds came to hand too late in the season to make a satisfactory test Other antiseptics were boracic acid, carbolic acid, magnesium hypochlorite, formalin, potassium permanganate, guaiacol, and several others In addition to these, we administered to a few men a placebo in the form of tablets of formalin

2 *The Method of Application*

Chloramine T was applied in two different ways —

(*a*) In an inhaling chamber, the drug being dispersed as a fine cloud by a high pressure steam jet This apparatus differed in design from that proposed by Colonel M H Gordon for the Army, but no doubt gave similar results A 5 per cent solution of chloramine T was used in the reservoir of the nebuliser , this strength was found to give as powerful an atmosphere of chlorine as was pleasant The room accommodated about 10 men and these remained therein for about 15 minutes per diem They were instructed to breathe strongly through the nose during this time but there was no way to ensure that these orders were carried out and in many cases they probably were not

(*b*) In a nasopharyngeal spray This was a glass hand spray made by one of us the nozzle of which was readily slipped through the mouth into the nasopharynx Two or three pumps were given with the bellows and the chloramine T (2 per cent) thus came copiously into contact with the whole nasopharynx and often dripped from the anterior nares This treatment was applied once a day

Acriflavine (kindly supplied to us by the Medical Research Committee) in a strength of 1 in 500 in salt solution was applied daily with our nasopharyngeal spray

The other antiseptics mentioned were used in the earlier stages of the investigation They were all applied with Parke Davis and Co s Glaseptic' nasal spray until the drug could be felt in the nasopharynx The strength of boracic acid was one drachm to the pint of carbolic 1 in 200 of formalin 1 in 200, and of potassium permanganate 1 in 1000.

3 *The Index of Cure*

The apparent value of these antiseptic treatments depends very largely upon what end it is proposed to achieve and the exact manner in which the process is carried out In general the technique is to apply the treatment until swabs taken from the nasopharynx fail to reveal the meningococcus The man is then looked upon as cured There are, however, a number of fallacies which must be avoided

(*a*) The treatment must not be carried on continuously during the whole period of quarantine for two reasons First, the treatment if applied on the day that the swab is taken will directly vitiate the result We have therefore always allowed 24 hours to elapse after treatment before the swab is taken Secondly the treatment if applied continually will readily diminish the number of meningococci or reduce their vitality so that they will not grow in culture, but when treatment is stopped they will frequently reappear again It is therefore essential not to apply treatment continually, but to give the man a chance of relapsing before he is said to be cured In practice the routine has been as follows — 1 Upon receipt a positive carrier is treated once a day until his next swab is due—that is to say, until six days have elapsed since the first swab In practice this is usually one or two days' treatment 2 Treatment is stopped 24 hours before the swab is taken 3 It is continued after the swab is taken until the report is received 4 If this is negative treatment is stopped, and if the man remains negative on weekly test, no further treatment is given 5 If the report is positive, treatment is continued until the next swab is due More recently, in order to give the "positives" a greater degree of treatment, we have swabbed them while positive every 14 days instead of every week On a negative swab being obtained, however, we reverted to the weekly tests

(*b*) A certain period of time must be allowed to elapse after a negative swab is obtained before a man is said to be cured, in order that the permanency of the cure may be established It is customary for a certain number of negative swabs at fixed intervals of time to be required before a man in the services is allowed out of quarantine The precise number of swabs has never, to our knowledge, been accurately worked out In the Army it was two, while the Navy at one time required six weekly negative swabs During the past season this number was reduced to four All our carriers, therefore, have been retained under observation until at least four negative swabs have been obtained, and we are thus able to give more accurate information as to the permanence of cure in these cases

The following figures show the number of relapses which occurred after various numbers of "negatives" had been obtained 375 carriers (pure 'Gordon" types) were subjected to the "4-negative" standard Of these—

137 relapsed (185 times) after 2 negatives" = 36 per cent
63 (74 times) 3 = 16

A small number of men were examined by mistake or for various reasons for more than the necessary 4 "negatives" Of these—

13 carriers relapsed after	4 negative swabs
5	5
4	6
2	7

The number of carriers who were examined after four "negatives" is so small that no statistical capital can be made out of these latter figures Nevertheless it is certainly remarkable that so many relapses were observed in so few cases From the foregoing figures it is clear that if two negative swabs are taken as the index of cure no less than 36 per cent of the men will, in fact, not be cured, and will be returned to the community in the same condition as they were before they were isolated It is also clear that under these conditions of "cure" a form of treatment may readily be supposed to have a value which is quite fictitious

The number of negative swabs which constitutes a cure is a practical question which has to be decided with due regard both to inconvenience to the Service and to safeguarding the Service It appears to us that it would be irrational to undertake a very extensive system of control, as in the Navy and then to stultify that system by prematurely discharging one-third of the proved carriers on two negative tests Clearly the proved carrier is the man on whom attention should be most concentrated if extensive administrative measures are taken against this disease at all and thus it would appear that the naval routine of four "negatives' is better than two "negatives The number of men involved when the carriers are only derived from contacts is so small relatively to the whole Service that four 'negatives" should not entail undue inconvenience In all our cases, therefore, the index of cure has been four consecutive negative swabs taken at weekly intervals During the whole of this time no treatment has been applied in order that every opportunity for early relapse might be present

The Results of Treatment

Owing to the relatively small number of carriers and to the fact that at first the treatment was often changed, the estimation of the value of these different methods is difficult On examining the figures, however, it is soon found that there is another factor which enormously increases the difficulty—namely, that one third of the men become cured immediately upon entry into the isolation camp *whatever the treatment applied to them may be* Thus of 375 carriers of pure "Gordon" types, 124 registered their four consecutive negative tests immediately upon entry into the isolation camp The treatment applied to these men was practically nil, since by the time the "doubtful" colonies had been proved to be positive, and the man had been removed to the isolation camp, the greater part of the week had passed and only one, or at the most two, days' treatment remained before it had to be stopped preparatory to the next swab When it is remembered that this treatment consisted of formalin tablets and boracic nasal sprays, as well as chloramine-T and acriflavine nasopharyngeal sprays, it appears justifiable to us to regard the effect of treatment as nil, and to assume that these men cleared up spontaneously Since, then, one third of the men are cured spontaneously, a drug must be very decisive in results before its curative action becomes very obvious

The effect of the antiseptics has been estimated in two ways (1) by calculating the ratio of cures to the number of men treated by each antiseptic, and (2) by counting the number of men who obtained 4, 3, 2, 1 or no "negatives" *immediately* upon starting upon a particular treatment

TABLE I.—*Showing the Cures Effected by Various Treatments*
TABLE II —*Showing the "Immediate Negatives" obtained by Various Treatments* *

Treatment	TABLE I Number treated	TABLE I Number cured	TABLE I Per cent cured	TABLE II. Number treated	Immediate negatives 4	3	2	1	0
Chloramine T in inhaling room	85	43	50	91	38	2	15	4	32
Chloramine T in spray	96	60	62	99	40	2	13	10	34
Acriflavine	101	59	58	101	51	11	9	26	4
Boracic	50	29	58	31	22	0	7	1	1
Carbolic ..	64	30	46	54	27	0	8	5	14
Magn hypochlor ..	59	28	47	52	25	0	5	8	14
Formalin ...	65	29	44	55	22	0	11	6	16
Pot permang	63	30	47	47	17	0	5	5	20
Guaiacol	35	17	50	26	8	0	4	0	14
Formamint ..	14	5	35	15	6	0	3	0	6
Average	632	330	52	—	—	—	—	—	—

* In Table II the cure is credited to that treatment under which the man was last

Table I shows that about 50 per cent of the men treated by any method were cured Any variation in the percentage is not greater than might be produced by chance and has no significance

Table II shows that with each form of treatment 40–50 per cent of the men are cured immediately, with boracic acid alone is the figure much higher, but here the factor of error due to small numbers comes in acutely This percentage (40–50) corresponds roughly to that given by all treatments together (33) which, as has been explained, may be assumed to be no treatment The difference between the 33 per cent of no treatment and the 40–50 per cent of treatment is due, not to the efficacy of treatment but to the fact that the two figures are calculated from two different series of men The 33 per cent relates to carriers of meningococci which agglutinate with monovalent sera while the 40–50 per cent refers to a series which includes in addition a number of carriers of cocci which agglutinate feebly or not at all with monovalent sera These latter often fail to agglutinate, and therefore these carriers are more easily "cured"

It is clear that the therapeutic effect of none of these antiseptics is sufficiently great to class one as better than another

On examining the figures of those men who remained positive after treatment, it is again observed that the results are fairly similar, about one third of the men failed to obtain a negative immediately after treatment Acriflavine and boracic are exceptions to this rule, the former showed only 4 positive in 101 after treatment, and the latter 1 positive out of 31 In the case of acriflavine these positives have passed into the group of "1 immediate negative," and there is some evidence that acriflavine actually does produce a transient inhibition of the bacteria

Conclusion

Looking at the results as a whole, we conclude that one third of the men recover spontaneously, and that none of the methods of treatment tested has any conspicuous merit, nor has one any obvious advantage over another This result is what might be expected from analogy with work on diphtheria carriers

We are much indebted to Dr John Brownlee, statistician to the Medical Research Committee, for opinions upon figures submitted to him

ON THE CLOSURE OF WAR WOUNDS IN HOME HOSPITALS

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As the result of experience gained during the last two and a half years it has been found possible to render wounds, the discharges from which have been teeming with pus organisms, surgically clean, so that in a period varying from a very few days to at most a week or two, an infected wound can be stitched up with every prospect of something approaching primary union taking place

The two surgeons whose names are chiefly associated with these results are in this country, Rutherford Morison and, in France, Carrel. Through the courtesy of Sir Berkeley Moynihan I was privileged in October, 1916, to see Mr Rutherford Morison demonstrate his method of treating war wounds with "B I P P," and also to hear Dr Sharman, of Pittsburg, who had spent some months in France seeing war surgery, relate his experiences at Carrel's hospital More recently I heard Colonel C J Bond, of Leicester, describe the Carrel-Dakin treatment, and not less useful have been several discussions on the subject with Colonel Moynihan himself

Between November, 1916, and the end of June, 1917, I have performed well over 300 operations for the closure of war wounds at the Bradford War Hospital and have gradually evolved a technique (which will probably be further modified as my experience grows, but) which already gives me results which I regard as very satisfactory and which I propose to describe in this article This I shall do at some length, since I consider that the highest percentage of good results can only be obtained by following out the method in detail

The Carrel, B I P P and Bradford Methods

The Carrel method —The Carrel treatment consists (1) in the sterilising of the wounds, and (2) in the suture of the surgically clean wound When a case is seen soon after the wound has been inflicted an anæsthetic is given, the skin around the wound is thoroughly cleaned and the wound is freely opened up foreign bodies lacerated muscles, damaged skin edges and loose bone fragments are removed all bleeding is stopped and special tubes are inserted, through which is instilled into the wound every two hours a solution containing 4 5 per cent of active chlorine—the object being to keep an efficient antiseptic constantly in contact with the whole of the wound surface. The discharge is microscopically examined every day or two, and in from 5 to 11 days the wound is usually sterile enough (1 organism to each 4 microscope fields) to enable it to be completely stitched up and for primary union to result Colonel Moynihan tells us that notices are hung up in Carrel's wards to the effect that every wounded man whose wound suppurates has a right to demand an explanation from his surgeon !

Now the problem of wound closure in the British war hospital is not so simple as this Cases come over from France in hundreds labelled "Carrel Dakin treatment"—with one convoy over 40 such cases came to Bradford—but they are almost without exception suppurating generally profusely, commonly the tubes have been removed, and if they are still in the instillation of Dakin's fluid has been intermitted. The process of wound cleansing has to be started all over again and although, sometimes in a few days, more often only after a week or two have elapsed the bacteriologist is able to report that the wound is surgically clean, my experience is that simple suture undertaken then is likely to be followed by something disappointingly short of primary union Nor is this to be wondered at when we remember how real a fact latent sepsis is, how, many months after a wound has healed, forcible movements or even simple massage may light up infection—suppuration, or tetanus, or even gas gangrene—it is easy to understand that, during the suppuration period, organisms will have had time to "dig themselves in" to the deeper tissue cells from which they are able to sally forth to upset the healing process in the stitched up wound

The B I P P method and its limitations.—Morison's B I P P method aims at introducing into a wound, admittedly infected, chemicals which for a long period continue to generate disinfectant agents, which experience has shown will effectually keep under the infection and allow healing to proceed In many cases the results are excellent, but commonly some area of the wound has to heal by granulation Occasionally pus collections form and require draining and whenever there is much loss of tissue and consequent tension on the stitches these are likely to cut out and allow the skin edges to gape

The Bradford method.—The method which experience has led me to adopt includes something of the B I P P method along with the Carrel Dakin treatment, and may now be described in detail.

I *Wound Sterilisation*

Most of the wounds as they arrive from France have already been opened up Where pus is pocketing in the track of a through and through wound, or beneath or between two adjacent muscles or where loose bone fragments or other devitalised or foreign bodies are present an anæsthetic must be given and the wound cleansed and laid freely open *The skin incision whenever possible should extend the whole length of the wound* A wound with a narrow bottle neck opening may have a Carrel tube in it and Dakin's fluid instilled into its cavity, but it is nevertheless not being treated by Carrel's method

The ideal Carrel wound is a basin which can easily be kept full to the brim with Dakin's fluid Such a wound would be a deep flesh wound in the front of the thigh Into the depths of such a wound are passed one or more tubes of about ¼ inch calibre of which the distal end is closed by a ligature and which has a few tiny side holes punched in that part of the tube which lies in the wound The tubes are connected with a reservoir containing Dakin's fluid hung over the bed and every two hours the nurse releases a clip and allows just enough fluid to escape to fill the wound to the brim without allowing any to run over

Posture can often be utilised to make it easier to apply the proper treatment—e g a man with a wound on the outer surface of his right thigh can be made to lie comfortably on his left side—so that his wound is uppermost And it is remarkable how contentedly a man with a wound of the buttock will lie for days together on his face

When the wound is so situated that it cannot be made to hold fluid basinwise gauze 8 to 12 thicknesses is cut exactly the shape of the wound but about ⅛ inch less in diameter so as to leave a tiny red margin all round when the gauze is tucked into the wound The Carrel tube is placed deep to the gauze which is saturated with fluid every two hours

In some of the hospitals in France an elaborately constructed wool and tissue covering is pinned around the affected limb Personally I favour extreme simplicity of dressings, a cage over the wounded part and no dressing but simply a dressing towel placed so that it keeps dust and flies from the wound but not touching the wound itself since if it is allowed to do so it will absorb fluid from the wound surface and so tend to defeat the object sought A really careful nurse who understands the principles of the treatment can generally manage to regulate the supply of Dakin's solution, so that there is no overflow to irritate the skin, if fluid does run over and threaten to produce dermatitis the simplest preventive is boric ointment melted in a glue-pot and painted with a brush on to the threatened skin

The bacteriological examination.—Every third or fourth day a platinum loop-full of the discharge is taken from the wound surface wherever it looks least healthy and spread thinly and *uniformly* evenly on to a microscope slide It is fixed by heat and stained (our bacteriologist Dr R Honeyburne finds brilliant-green a very satisfactory stain differentiating well between nucleoli and organisms) and examined with a 1/12 inch oil immersion lens The organisms on ten fields are counted and I make it a rule not to attempt to close a wound until two reports of an average of less than three organisms per field have been returned.

II *Wound Closure*

Flesh wounds.—1. The skin around the surgically clean wound is cleansed in the ward by the nurses, much as the skin prior to a clean operation is but only so far as it can be done without causing pain In the theatre under general anæsthesia the skin is vigorously rubbed over with biniodide of mercury in spirit (1 500) 2 The edges of the wound are trimmed with a scalpel evenly all round—rather less than ¼ inch of healing edge being removed but in wounds which are tending to scar over all the scar tissue is cut away 3 The granulations are thoroughly curetted. 4 The skin edges are undercut, even in a small wound where the edges will easily come together they are undercut, as I find that much more accurate apposition is thus obtained In large wounds, particularly with much loss of tissue, extensive undercutting is done 5 Any definitely bleeding vessels are tied (oozing does not matter), the whole wound area is swabbed with methylated spirit and a little B I P P —never more than an eggspoonful and in a smallish wound half that quantity—is scrubbed into the raw surface with the gloved fingers 6 Wherever possible any raw muscle surface is closed by bringing together the edges of the deep fascia (exposed by the under-cutting) with a running stitch of stout catgut 7 Thick silk sutures (No 5 pedicle silk boiled and soaked for 48 hours in tinct iodi) are passed through the skin and the deep layers of the wound at intervals of about ¾ inch and tied tightly so that no "dead cavity" is left Where there is tension on the part I find the most useful stitch a combination of a mattress with a simple surgical stitch The mattress stitch is passed widely and deeply and pulled tight at one corner with a single loop, the needle is then passed through the skin edges, and on tying the final surgical knot wide apposition of the deep structures and accurate approximation of skin edges are obtained. 8 A continuous catgut stitch is used to complete the coaptation of the skin edges 9 The skin is cleaned and smeared over with Moynihan's cream [1] and a simple dry gauze and wool dressing applied

The dressing is not touched for 14 days It is then removed, any discharge is wiped away and Moynihan's cream and another dry dressing are applied. At the second dressing a week later the stitches are removed, and never before.

Of 10 cases so treated I find that 7 or 8 will have healed practically by first intention 1 or 2 will have gaped a bit at one part leaving a superficial granulating area, and the tenth—practically always one where there has been loss of tissue and consequent tension on the stitches—will be a failure at any rate in large part, and will require to be done again, or perhaps skin grafting will be necessary

It is not simply that healing is by this means accelerated and frequency of dressings enormously reduced, lineal non-adherent scars take the place of wide adherent disabling scars I am sure that for years to come it will be our duty to reduce disability in war pensioners by excising the painful scars which limit movements and reduce earning capacity and I have already performed a considerable number of such operations with the happiest results

Compound fractures of long bones.—In cases of recent wounds with compound fractures I do not attempt Carrel's treatment but adopt Rutherford Morison's treatment because by so doing the limb can at once be fixed in a dressing which does not require to be changed for a fortnight, and so a great amount of suffering is done away with The following is a summary of Mr Morison's own description[2] 1 Under an anæsthetic clean the skin 2 Open the wound freely, and, if possible, sufficiently to permit of inspection of its cavity Cleanse the cavity with dry sterile mops, Volkmann's spoon, &c, and remove all foreign bodies 3 Mop the surrounding skin and the wound cavity with methylated spirit 4 Rub B I P P into all parts of the wound with dry gauze, removing any excess[3] 5 The wound is then stitched with deeply placed iodised silk sutures, and a large dressing of iodoform gauze and sterile wool bandaged on The dressing is not removed for a fortnight If there is much discharge the outer dressing may be removed and a clean pad applied

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[1] A mixture consisting of as much bismuth carbonate in 1 1000 watery solution of HgI as will make a thick paste

Frequently when the dressing is taken off the discharges, sometimes evil smelling, are found plastered all over the skin, producing a most unpleasant appearance But when the discharge has been bathed away the wound is usually found to be to a large extent healed, a narrow strip of superficial granulations remaining to be dressed once in every five or six days

It approaches the miraculous to see a limb pouring foul pus from a wound at the bottom of which lies a segment of humerus or of femur smashed into a multitude of spiculed fragments, and every attempt at dressing which causes the patient untold agony, bandaged (if it is an arm) to the chest wall or (if it is a femur) fixed in a Thomas's splint, and after having been left untouched for a fortnight uncovered and found to show only a superficial granulating wound from which commonly the 14 days' discharge has been less in amount than that of one day previously Not only is there saving of nursing labour and of pain to the patient and the conversion of a compound into a simple fracture, but the healing of soft parts takes place without that terrible formation of contracting scar tissue which, by compressing the nerves, produces so frequently a helplessly paralysed limb

Compound fractures of short bones —In cases of smashed tarsus or carpus the missile has often "mushed" up one or more bones An X ray plate may show no obvious bone injury, but unhealthy granulations will soon pout from a relatively small skin wound, the hand or foot becomes painful and tender, there is some fever and more or less swelling of surrounding soft tissues Under an anæsthetic the wound (or, if there are two, the uppermost one) is opened up, the pulped up bony tissue is scraped away thoroughly, and the wound made as basin shaped as possible, the skin wound being enlarged until it is larger than any transverse diameter of the hole in the bones One or more Carrel's tubes are inserted, and the wound cavity is kept constantly filled with Dakin's solution The hole quickly becomes lined with healthy granulations, in a comparatively short time the wound has closed in and healed over The majority of the patients get moveable joints I have seen almost normal function after removal of the astragalus and part of the os calcis

Chronic necrosis with sinuses —There remains to be considered the case in which a fracture of a long bone has united, but a sequestrum is locked up in the callus or some less definite area of necrosed bone keeps up the discharge of pus from one or more sinuses The first case I treated by the Carrel method may be described as a typical example

A man was admitted to the Bradford War Hospital at the end of 1916 suffering from a badly smashed femur The wound was bipped and the fracture united, and the man was sent to an auxiliary hospital walking on crutches A sinus appeared and continued to discharge pus even after a fairly large sequestrum had been removed At Sir B G A Moynihan's suggestion an extensive operation was performed A 10 inch incision was made in the line of the femur, through the old scar on the front of the thigh The incision was carried down to and through the periosteum and the soft tissues were stripped back from the bone All the bony irregularities about the seat of fracture were freely chiselled away until the exposed section of femur formed a smooth, regular floor of a large basin like cavity capable of holding several ounces of fluid A sequestrum 3 in long was found encapsuled in the new bone and removed The skin was stitched back on either side, so that the wound remained funnel shaped It was treated on Carrel lines, being filled up with Dakin's fluid every two hours In this case no tubes were used the limb was adjusted with pillows until the wound margins were level and the fluid was poured in every two hours to keep the "basin" full

In less than three weeks the bacteriologist was able twice to report the wound surgically clean Under ether the soft tissues were freed from the bone, a little B I P P scrubbed into the raw surface and thick silk sutures used to bring together the whole thickness of skin and muscles over the bone The first dressing was done 14 days later and almost primary union found to have taken place A fortnight later a linear scar remained and the soft tissues were moveable over a smooth bone surface

Such results as these make one feel that a new era has arrived with regard to the treatment of infected wounds and that surgeons will never again allow wounds to go on suppurating, satisfied with doing nothing to induce them to heal beyond draining and dressing them

In conclusion I have to thank Lieutenant-Colonel W Wrangham for permission to describe the work done at the Bradford War Hospital

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STUDIES IN WOUND INFECTIONS

ON THE GROWTH OF ANAEROBIC BACILLI IN FLUID MEDIA UNDER APPARENTLY AEROBIC CONDITIONS

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IT has been known for some years that the addition of a piece of animal or vegetable tissue to any fluid media had a beneficial action on the growth of the anaerobic bacteria

Tarozzi was the first to point out the advantage of such a procedure, the *sine qua non* of his method being the addition to the fluid media of a piece of animal tissue, usually kidney or testicle, taken as soon after the death of the animal as possible This method, in spite of the trouble involved in obtaining such tissues perfectly sterile, was used extensively by Noguchi in isolating various forms of spirochætes

Later Ori and Wrzosek showed that the substitution of a piece of potato or other vegetable tissue for the animal tissues used by Tarozzi was followed by equally satisfactory results, and further, that sterilisation by heat did not interfere with the beneficial effect of such a procedure

Wright and Dreyer working in Boulogne, employed as a routine method for growing anaerobes tubes of broth to which a piece of potato had been added previous to sterilisation, and by such methods obtained abundant cultures of all the prevalent anaerobes isolated from wounds without taking any further precautions for obtaining anaerobic conditions, it was even found that growth occurred when a stream of oxygen was passed through the fluid portion of the media

The usual explanation of such results has been that the animal or vegetable tissues contained some body capable of acting as a reducing agent That living tissues, both animal and vegetable, act as reducing agents is a well recognised fact, but it is unlikely that a small pellet of potato after being autoclaved should be able to bind all the oxygen which would be constantly absorbed from the surface of the media

It was therefore decided to confirm some of the experiments that had been carried out by different workers and to try to ascertain if any other explanation could be found for these somewhat surprising results

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[2] British Journal of Surgery April 1917 THE LANCET 1916 ii 268

[3] B I P P is made as follows Iodoform 16 oz bismuth subnitrate 8 oz liquid paraffin 8 oz, or a sufficient quantity to make a firm paste The powders are mixed together in a mortar and the paraffin incorporated

Experiments with Vegetable Tissues

In order to confirm the results obtained by Wright and Dreyer showing that all the usual anaerobes found in wounds give an abundant culture when a small piece of potato or other vegetable is added to the broth before sterilisation a number of broth tubes were taken, to each of which a small cube cut from a potato was added after which they were sterilised in the autoclave Into these a variety of anaerobic bacilli were planted, and the tubes were then incubated at 37° C without any further precautions to produce anaerobic conditions The tubes were examined for growth after intervals of 24 and 36 hours The results are given in Table I

TABLE I

No	Laboratory name of culture	Type of bacillus	Result
1	Grout I	*B perfringens*	Copious growth after 24 hours
2	Hancock I		
3	Boone II	B of malignant oedema	
4	McArdle E	" "	"
5	Tholby III	"	"
6	McFadzean II	–	
7	McFadzean VII		"
8	Boone I	A non motile bacillus resembling *B perfringens* except in its fermentation reaction	"
9	Tholby IV	Gram negative bacillus with round terminal spore	" "
10	Tholby	Bacillus resembling *B tetani*	" "
11	Boone III	Hibler IX type	Copious growth after 36 hours

This table shows that the addition of a small piece of potato to the broth before sterilisation enables cultures of the anaerobic bacilli commonly found in wounds to proliferate rapidly in the absence of any further procedures to produce anaerobic conditions

Further experiments showed that pieces of carrot, cabbage, or grape were equally efficacious as potato In addition to these substances flakes of bran were also employed, and an experiment was made in which different amounts of bran were added to the broth to ascertain if the growth varied with the amount of bran added This experiment was carried out in the following manner To a series of broth tubes, each containing 10 c.c of broth, varying quantities of bran were added After sterilisation in the autoclave each tube was planted with a loopful of broth culture of the bacillus of malignant oedema and then incubated at 37° C without further precautions as regards anaerobic conditions Examinations for the presence of growth were made at varying intervals The results are shown in Table II

TABLE II

Amount of bran added	Result after 18 hours	Result after 36 hours
1 flake	No growth	No growth
4 flakes	Slight growth	Abundant growth
10 flakes	Good growth	
Many flakes	Abundant growth	

This experiment shows that up to a point the more bran that was added the more copious and rapid was the growth It may here be noted that of all the various substances which were employed in the experiments detailed in this paper to promote the growth of anaerobic bacilli in broth cultures, bran appeared to be the most efficacious

Taking the result of these experiments into consideration, it was thought that some 'foodstuff" such as vitamines, might have been given up to the broth by the vegetable substances added to it which enabled the anaerobic bacilli to proliferate even when oxygen was present, in order to verify this experiments were made to ascertain if anaerobic bacilli would grow in broth to which an alcoholic extract of bran had been added

These experiments were carried out in several different ways For instance the alcoholic extract of bran was evaporated to dryness and small portions of the substance thus obtained were added to the broth or strips of sterile filter paper having been soaked in the alcoholic extract and then dried were placed in broth Again small quantities of the fluid alcoholic extract were added directly to the broth These various samples of broth were then planted with anaerobic bacilli and incubated under ordinary aerobic conditions

The results obtained by these experiments were conflicting In some cases the broths containing the alcoholic extract gave abundant growths of the anaerobic bacilli, whereas control broth tubes gave no growth In other cases, for instance that experiment in which filter paper impregnated with the alcoholic extract had been added to the broth, growth appeared equally abundant in a control tube to which a piece of untreated filter paper had been added, as in those which contained the treated filter paper It was also observed that growth occurred only in those tubes where a considerable mass of the solid alcoholic extract had been added or an extensive precipitate had been formed

Experiments with Inert Substances

Abandoning the idea that the growth of the anaerobic bacilli was due to the presence of any special 'foodstuff," it was decided to carry out experiments to ascertain if growth would occur when various inert substances were substituted for the vegetable tissues

In these experiments various porous substances, such as asbestos wool, cotton wool, lint, sponge, charcoal, chalk, cork, sand, cardboard, blotting paper, khaki cloth, and, lastly, a rusty nail, were each added to a series of broth tubes, which were then autoclaved Each series of tubes together with a control tube of simple broth, were then planted with an equal quantity of an anaerobic bacillus and incubated under ordinary aerobic conditions Examinations for the presence of growth were made after incubation had continued for 15 18, 24, 36 and 48 hours The results are given in Table III.

TABLE III

Figures indicate the number of hours the tubes were incubated before growth appeared

0 indicates no growth throughout the duration of the experiment

– indicates that this special portion of the experiment was not carried out.

Bacillus planted	Control tube of broth	Substances added to broth											
		Asbestos wool	Cotton wool	Lint	Sponge	Piece of charcoal	Piece of chalk	Piece of cork	Sand	Piece of card	Piece of blotting paper	Piece of khaki cloth	Rusty nail
B perfringens	0	15	15	36	15	24	18	24	24	48	0	24	—
B malignant oedema.	0	36	36	0	0	24	24	0	0	0	0	0	36
B butyricus	0	15	15	24	0	18	15	18	18	24	0	0	18
Pseudo-tetanus	0	38	36	36	0	36	24	0	48	0	0	0	—
Tholby IV	0	36	36	36	36	36	24	36	36	24	0	24	—

These results show conclusively that any porous inert substance when added to broth renders this medium quite as suitable for the growth of anaerobic bacilli, without any further precautions as regards anaerobic conditions being taken, as the addition of pieces of potato or other vegetable matter These facts can be most simply explained by assuming that the bacilli lodged in the meshes of the various substances are locally able to produce anaerobic conditions, in consequence of which they proliferate at first only in the interstices of the material but later also in the surrounding media

On studying this table more closely it is, however, to be noticed that none of the tubes containing pieces of blotting paper developed any growth, in these tubes the paper added consisted of a small unfolded slip of thin blotting paper Again, it is noticeable that growth developed only in two out of the five tubes containing pieces of khaki cloth Owing to the small amount of this material available only a very small piece could be added to each broth tube, and during the process of sterilisation the woollen strands became so unravelled that none of these tubes contained a close meshed mass comparable to that seen in the tubes containing the asbestos wool

From these observations it appeared probable that neither in the case of the pieces of unfolded blotting paper or of the minute pieces of unravelled khaki cloth were suitable interstices formed to enable the anaerobic bacilli to produce the conditions necessary for their growth It was therefore decided to carry out a further series of experiments in which different amounts of asbestos wool were added to the broth in order to ascertain if a closely packed mass of this material afforded more suitable conditions for the growth of the anaerobic bacilli than a smaller and more open meshed piece of the same material This experiment was carried out as follows —

Two strains of anaerobic bacilli were taken, one of which had been demonstrated to be a very strict anaerobe, the other being capable of proliferating under less strict conditions of anaerobiosis Each of these bacilli were then planted into two culture tubes, the one containing ordinary broth, the other broth to which a quantity of sterile asbestos wool had been added The quantity of asbestos wool added to these tubes was varied In the tube in which the strict anaerobe was planted a larger and more closely packed mass of this wool was placed than in the tube in which the bacillus capable of growing under less strict anaerobiosis was planted These tubes were incubated without further anaerobic precautions and examined after 24 hours, when it was found that the strict anaerobe showed abundant growth with much gas formation, while the less strict anaerobe, having only the protection of a small and open meshed piece of asbestos wool, gave only slight growth and very little gas formation

This experiment shows that the amount and consistency of the inert substance added to the broth is an important factor in making the conditions suitable for the growth of anaerobic bacilli

Experiments with Capillary Glass Tubes

In order to test further the soundness of the theory put forward above—namely, that growth takes place at first in the interstices of the mass of inert material, an experiment was made in which a hair fine capillary glass tube was placed in the broth Such a hair fine glass tube would represent in its simplest form a single interstice in a mass of asbestos wool, and if the theory put forward above was correct the growth should commence in this tube and only later spread to the surrounding media. A further advantage of such an experiment was that even in the finest capillary tube growth could be recognised by the formation of minute bubbles of gas These experiments were carried out as follows —

A series of broth tubes were taken and planted with anaerobic bacilli, each variety of bacillus being planted in equal quantity into two tubes Into one of the tubes, in the case of each bacillus, a hair fine glass capillary open at both ends was placed, the other tube being kept as a control The tubes were then incubated and after varying intervals examined for growth In the case of the control tubes no growth was ever noticed but in a certain proportion of those containing the hair fine capillary tubes growth appeared after an interval varying from 24 to 48 hours That this growth commenced inside the capillary tube was shown by the appearance of minute bubbles of gas inside the tube before any evidence of growth could be detected in the surrounding media

That it was only a proportion of those cultures containing capillary tubes which gave growth can be explained by assuming that, as these tubes would only contain a fraction of a cubic millimetre, and that, as the anaerobic bacilli were not planted out very thickly, a proportion of the capillary tubes would not contain even a single living bacillus

In Table IV a series of successful experiments are given which show that all the anaerobic bacilli commonly found in infected wounds are capable of growing in broth to which such a hair fine capillary tube has been added without any further precautions being taken to produce anaerobic conditions

TABLE IV

Laboratory name of bacillus	Type of bacillus	Broth control	Broth + capillary tube
Grout I	*B perfringens*	0	Good growth in 36 hours
Forrest I	Malignant œdema	0	48
Forrest II	*B butyricus*	0	24
Tholby II	Pseudo tetanus	0	48
Tholby IV	Gram positive acid forming bacillus	0	36
Cullingford	Putrefactive bacillus	0	24

Other Experiments Summary of Results

These results show that the growth of the anaerobic bacilli takes place at first inside the confined spaces, however in order to show that anaerobic conditions were produced in the spaces the following experiments were made

Tubes of glucose broth were tinted with an aqueous solution of methylene blue, and a suitable mass of asbestos wool was then added After sterilisation these tubes were planted with *B perfringens* and incubated under the usual aerobic conditions Rapid growth occurred, which was quite apparent after four hours, and it was noticed that the broth was completely decolourised in the immediate neighbourhood of the asbestos wool On shaking the tube, however the colour returned to its original density This reduction and reproduction of the colour could be produced at intervals for several hours

This experiment was repeated with broth coloured with sulphindigotate of soda with exactly similar results and it was also found that some of the bacilli which were not very strict anaerobes were able to grow in this broth without any asbestos wool being added to it (especially when they were thickly planted) and that here also the decolourisation of the sulphindigotate took place at the bottom of the tube, where a large amount of bacilli were collected It therefore seems certain that the anaerobic bacilli are either able to absorb oxygen rapidly or during their growth produce some very strong reducing substance which rapidly removes any oxygen that may be present

Further experiments in which a similar technique was employed showed that during their growth the anaerobic bacilli were able to remove any oxygen from the culture media much more rapidly than many of the aerobic bacilli

The above experiments show that the anaerobic bacilli are capable of proliferating freely in broth to which a piece of any inert porous substance has been added The most convenient substance is a small pledget of asbestos wool, owing to the ease with which it can be sterilised by holding it in the flame of a Bunsen burner until it is red hot

These experiments also show that the growth takes place first in the interstices of the porous material, that in all probability anaerobic conditions are produced in these minute spaces, and that later the oxygen present in the surrounding broth is removed during the growth of the bacilli entangled in the porous mass

Experiments with Substances under Anaerobic Conditions

Lastly experiments were made to ascertain if a more rapid and more certain growth of the anaerobic bacilli could be obtained if in addition to the ordinary methods for obtaining anaerobic conditions a piece of inert porous substance was added to the broth into which the bacilli were planted The details of these experiments are as follows —

Experiment 1 —Six small test-tubes were taken and into each an equal quantity of sterile serum was placed and each tube was then planted with an equal quantity of *B perfringens* emulsion Into three of these tubes a small compact pledget of asbestos wool was introduced, the other three tubes being kept as controls After this all the six tubes were sealed with a layer of melted vaseline and incubated at 37° C After three days' incubation it was found that no growth could be demonstrated in any of the three control tubes, whereas all the tubes containing the asbestos wool showed abundant growth The absence of growth in the control tubes was probably due to the now widely recognised fact that *B perfringens* will only proliferate in serum when the implantation is a heavy one

Experiment 2 —A broth culture of the bacillus of malignant œdema was diluted by ten fold steps to 1 in 1,000 000 dilution Twenty c mm of each of these dilutions were then planted into tubes of (i) simple broth, (ii) broth to which a small piece of potato had been added, (iii) broth into which a pledget of asbestos wool had been placed These tubes were then placed in the anaerobic apparatus described by McIntosh and Fildes and incubated at 37° C The results obtained at the end of 24 and 48 hours are given in Table V

TABLE V*

Media employed	Result after 24 hours	Result after 48 hours
(i) Broth	No growth in any tube	Growth in tubes planted with all dilutions up to 1 in 100 000
(ii) Broth + potato	Growth in tube planted with culture diluted 1 in 10	
(iii) Broth + asbestos wool	Growth in tubes planted with culture diluted 1 in 10 and 1 in 100	Growth in tubes planted with all dilutions up to 1 in 1 000 000

These experiments demonstrate that anaerobic bacilli will grow both more rapidly and also from a smaller implantation when *in addition to the usual anaerobic conditions* some porous substance such as potato or asbestos wool is added to the culture medium

AN UNUSUAL COMPLICATION OF LAPAROTOMY FOR GUNSHOT WOUND

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IN the following case of gunshot wound of the abdomen with perforations of intestine, which were sutured, diffuse purulent peritonitis occurred as a complication, consequent upon rupture of an abscess in the anterior abdominal wall. Treatment by the Carrel Dakin method was carried out, and resulted in recovery

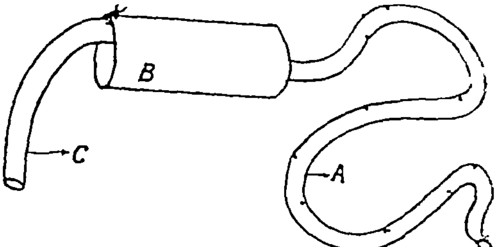
The patient, a soldier of a rifle regiment aged 26, was hit in the abdomen by a rifle bullet on April 4th, 1917 He was admitted by a field ambulance on the same day, where after the administration of morphia, he was marked for urgent attention, and transferred immediately to a casualty clearing station There also on the same day his abdomen was opened by a paramedian incision Five holes in the small gut and two tears in the mesentery were sutured. No other injury was found, nor any foreign body He had a mild peritonitis for 24 hours, but progressed satisfactorily

Thirteen days later, on April 17th, the patient was transferred to a base hospital On admission his condition was good, temperature being 97 6° F and pulse 72. There was localised tenderness over the middle of the scar, otherwise the condition of the abdomen was excellent He complained of a little pain referred to the area of the operation incision. There was no rigidity and the abdomen moved freely on respiration

Suddenly, on the night of April 17th, about 10 P M., he was seized with acute abdominal pain He vomited frequently His pulse rose to 120, his temperature at 6 A.M. on April 18th was 100° On examination there was general tense rigidity, considerable tympanites, great tenderness but no appreciable dullness in the flanks. At 8 A.M. he exhibited all the signs of a diffuse peritonitis, the vomiting continued, and his condition became critical.

Operation, 9 A M , April 18th The original incision was opened An abscess cavity full of thick greenish yellow pus was found on the posterior sheath of the rectus, and extending between the divided muscle This had tracked backwards and burst into the peritoneal cavity through the original line of incision The abdomen contained some pints of a thin greenish purulent non odorous fluid. There were flakes of lymph widely diffused upon the intensely congested bowel From this fluid pure cultures of *Staphylococcus pyogenes* a short-chained streptococcus, and *B coli* were isolated

FIG 1



The Carrel technique modified for the peritoneal cavity A, One end of the Carrel tube of which 6-8 in are left inside the abdomen. B Outer drainage tubing ¾ in in diameter C, Outer end of Carrel tube connected to irrigator

The patient's condition was so grave that it precluded any extensive manipulation of the bowel No perforations were found nor was there any sign of the escape of intestinal or other visceral contents After copious irrigation with Dakin's fluid four drains of ¾ inch tubing 2 inches long were inserted one in each flank, into the right and left paracolic gutters and one into each groin (Figs 1 and 2.) These were stitched in position and through each a Carrel tube was introduced into the abdominal cavity so that about 6 to 8 inches of the perforated tube lay inside the abdomen The flank tubes were planted into the paracolic gutters The groin tubes were allowed to lie free amongst the coils of bowel. In turn each Carrel tube was sutured to the wall of the outer large drainage tube. The excess of Dakin's fluid was [illegible] mopped out from the pelvis The original abdominal incision was then closed by interrupted through [illegible] sutures including all structures in one. A small tube was introduced into the abscess cavity in the rectus sheath. At the time of the operation the incision wound was also "Carrelled." The anaesthetic administered was warm open ether and subcutaneous transfusion with saline (about 3 pints) was carried out during the operation. On completion of the operation, which lasted about 25 minutes, the pulse was 15[illegible] and the temperature subnormal. The patient's condition was then very grave.

In the ward the patient was put in the Fowler position. Subsequently irrigation with [illegible] and tubing connected up to each of the four small Carrel tubes was carried out three-hourly for the first two days and four-hourly for the next five days. Thereafter the irrigation was gradually slackened off from six-hourly to eight-hourly flushings. The total quantity of Dakin's fluid used at each flushing was from about 50 to 60 c.c.

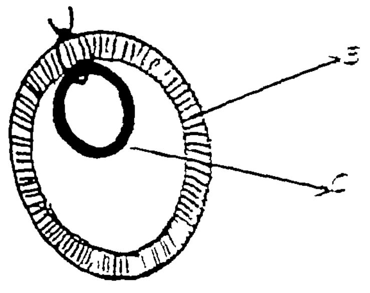
Pulse and Temperature During First Six Days

	Operation day		19th		20th		21st		22nd		23rd	
	A.M.	P.M.*	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
Pulse	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Temp. (°F)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* First day shows reading after operation.

On the evening of the day of the operation the patient's temperature was subnormal and remained so until the evening of April 21st (three days). The change in pulse was remarkable (see table). It registered 15[illegible] in the morning after the operation and 11[illegible] in the evening. The temperature chart was equally striking. The first rise above normal after the operation occurred on the evening of April 21st when his temperature reached 99°. The pulse rapidly fell to normal, regained its tone, and from the day after the operation ran steadily at about 72 to 80. From April 23rd he ran a slight evening rise of temperature (usually 99-99.2°) which continued for [illegible] days. During this time, in the mornings, the temperature was always normal. On May 15th his temperature remained steadily at normal and his pulse was then regularly about 72. Only on one occasion did the temperature rise above 100°—namely, on the evening of April 30th—when the pulse also rose to 104. The cause was obviously a localised collection of pus, which was not draining efficiently through the laparotomy wound.

FIG. 2



Explanatory section on a larger scale

Dressings.—Patient was dressed twice daily for two weeks, and thereafter once daily. Owing to local infection from the abscess all the stitches had gradually to be removed from the laparotomy wound by the end of the third day. Pocketing occurred on both sides in the rectus sheath. Pockets were opened by sinus forceps and Carrel tubes were introduced into their farthest extremities. The abdominal parietes were strapped effectively with strips of 2 inch adhesive plaster applied in a laminated manner from behind the back, circling around the abdomen and crossing the laparotomy wound transversely, spaces being cut in the adhesive to allow for drainage and the re-insertion of the Carrel tubes. These strips had to be reapplied once daily

At each dressing the Carrel tubes leading inside the abdomen were gently twisted round and slightly withdrawn through the outer large drains. They were then fixed by safety-pins as before, and the Dakin fluid was then turned on through the connexions for a few seconds. It was observed that on doing this in the first half-dozen dressings a copious amount of pus was washed out through the large drains. By gently moving the Carrel tube the coagulum at the inner end of the large drain was dislodged, and any free exudate was then washed out by the fluid from the Carrel tube. Gradually each day the Carrel tubes were drawn out, until at the end of 18 days (May 6th) all four were removed and the four small drainage-wounds allowed to close.

Calomel, gr 1/6, was administered six hourly for two days Thereafter the patient obtained a natural action of the bowels and only once had an attack of colic, due probably to an indiscretion of diet On April 20th, two days after the operation, patient's blood was examined and the count showed as follows Polymorphonuclears, 52 5 , eosinophiles, 5 5 , granular basophiles, 3 0 , large hyalines, 12·0 , and lymphocytes, 27 0 per cent Leucocytes, 20 000

Thirty three days after the operation, having made an excellent recovery, patient proceeded to England.

Remarks —To sum up, the case appears to us to present certain points of interest 1 Patient had already, prior to the operation for generalised peritonitis, undergone a laparotomy for a gunshot wound, with suture of several holes in the gut and mesentery 2. At the time of the second operation his condition was undoubtedly grave 3 The bacteriological findings at the time of the second operation pointed to a virulent infection 4 His leucocyte reaction determined on the second day after his second operation pointed to a strong resistance

There is no doubt that the bursting of the abscess in the rectus sheath was the cause of the diffuse peritonitis There may be room for doubt that the abscess was a suture abscess There is, however, little doubt that the infection *first developed* in the abdominal wall, originating either from within from contamination of the perforated gut, or from without from skin infection

The ultimate excellent recovery, without for the moment considering Carrel Dakin treatment, pointed to the fact that the first operation had been successful so far as repairing lesions in the gut was concerned One is quite aware that even the worst cases of peritonitis sometimes go straight ahead after operation, but the clinical picture and the whole facts of the case point strongly to something more than coincidence here, and suggest the further invest
the Carrel technique applied to the peritoneal cav

INOCULATION AGGLUTIN

BY I WALKER   D VICT ,
HONORARY CONSULTING PATH   SECON
GENERAL HOSPITAL PROFESSO   BRISTOL
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(*Report to the Med*   ommi
the

IN an earlier
tion titres observed in su
inoculated previously with
gave an account of the
infective agglutinins during
fevers, and stated the
experiments which supported
Harvey, Dreyer and others, t
paratyphoid agglutinins is assc
tion which brings about a rise
the prior injection of killed typh

The advent of a number of
inoculated with the triple typh
vaccine, afforded an opportunity
extent and persistence of the
occasioned and permitted an inquiry

The results now appended se
inoculation agglutinins which appear
injection of dead typhoid, para A

raise the titre for typhoid bacilli above that which follows when typhoid bacilli alone are employed, and that these titres are specific absorption titres and not due to co-agglutination

Methods —The methods throughout were precisely the same standardised procedures as those stated in our communication to the *Journal of the Royal Army Medical Corps* in September, 1916

Inoculation Agglutinins for B Typhosus *only*

In 272 additional cases the single typhoid vaccine had been given and the results allowed comparison with similar findings in a further 77 cases inoculated before 1916, and another set of 268 cases examined in 1915–16 (Tables I and III) The figures in each lot are somewhat similar, although those for 1916 exhibit a larger number of negatives and a higher percentage of units over 650

TABLE I —*Typhoid Inoculation Agglutination Units per c c of Serum in Cases not Clinically Enteric*

Inoculated 1916–17

Weeks since inoculation.	No of cases	Units Under 3	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
		%	%	%	%	%	%	%	%
1–10	13	—	—	5	16 6	48 3	20	5	5
11–20	60	3 7	7 3	11 15	21·05	22 15	10·2	6 25	12·8
21–30	69	5·7	5·55	20 05	18 85	26·4	11·85	5·8	5·8
31–40	62	9 4	19 6	27	15 45	13·6	7 65	3 4	4
41–50	32	18 3	19·05	19·05	13 48	11 1	16·25	—	2·77
51–60	32	31 2	23·2	—	16 75	14 35	5·25	2·65	6·6
61–70	4	25	25	25	—	—	—	25	—
Totals	272	10 7	12 5	16·9	16·9	19 5	11	4 8	7 7

Inoculated before 1916

Weeks since inoculation.	No of cases	Units Under 3	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
31–40	6	—	66 6	—	16·6	16·6	—	—	—
41–50	9	—	—	11 1	22 2	11 1	33 3	11 1	11 1
51–60	24	4 2	12 5	16·6	29 1	25	4·2	4 2	4 2
61–70	38	5 3	—	18 4	18 4	36 8	15 8	—	5 3
Totals	77	3·9	9·1	15·6	22 1	28 5	13	2·6	5 2

Inoculation Agglutinins for B Typhosus *and* B Paratyphosus A *and* B

In Table II the titres obtained from the blood of 310 convalescents are incorporated These men had all been injected with the triple vaccine It will be seen that the units for *B typhosus* show a larger number of higher positives than
those found wher   single vaccine was injected (Tables I
and III) The p   nd B units differ considerably, those
of para A being   nly lower than the para B but in
both instances t   and persistence of the agglutina
tive capacity c   than what we had been led to
from pro   l and human experiments
The question   arises as to the respective parts
ed by the   ll emitted by the three types
bacterial   general   ted that during
A bacilli the
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TABLE II.

Inoculation Agglutination Units for Typhoid, Paratyphoid A and Paratyphoid B where no Infective Agglutinin was found

Weeks since inoculation	Number of cases	Units 3-15			15 35			35-65			65-150			150-350			350-650			650-1250			1250-2000		
		T	A.	B.	T	A.	B	T	A.	B	T	A	B	T	A.	B	T	A.	B	T	A	B	T	A.	B
		Per cent			Per cent			Per cent			Per cent			Per cent			Per cent			Per cent			Per cent		
1- 5	6	—	—	—	—	—	33 3	33 3	16 7	11 1	33 3	66 6	33 3	16 7	—	11 1	—	16 7	—	16 7	—	11 1	—	—	—
6-10	18	—	11 1	11 1	5 6	—	—	5 6	33 3	11 1	27 7	33 3	33 3	5 6	5 6	16 7	11 1	—	11 1	44 4	16 7	11 1	—	5 5	—
11-15	38	—	13 2	2 6	2 6	7 9	2·6	—	31 6	18 4	36 8	36 8	37 4	7 9	—	18 4	21 1	5 3	5 3	31 6	2 6	2 6	—	2·6	2 6
16-20	43	2 3	18 6	9·3	4 7	23 2	2 3	18 6	18 6	23	30 3	28	34 9	13 9	9 3	11 6	16 3	—	13 9	13 9	2 1	—	—	—	—
21-25	47	—	—	4 2	2 1	19 2	2·1	27 7	27 7	25·6	27 7	38 3	42 6	10 6	8 5	17	14 9	4 2	2 1	17	2 1	6 4	—	—	—
26-30	55	7 3	14 6	10 9	3 6	10 9	7 3	10 9	30 9	18 2	30·9	23 6	49·1	21 8	10 9	7 3	14 6	7 3	—	10 9	1 8	—	—	—	—
31-35	39	2·6	12 8	5 1	20 5	20 5	12 8	2 6	18	25 6	23 1	28 2	23 1	23 1	10 3	28 3	17 9	—	5 1	10 2	5 1	—	—	5 1	—
36-40	36	2 8	25	19·5	13 9	16 7	8 3	11 1	33 3	22 2	22 2	19 5	41 7	11 1	—	—	22·2	5 5	—	16 7	—	8 3	—	—	—
41-45	11	9·1	9 1	9·1	—	18 2	—	18 2	27 3	18 2	27 3	45 4	54 5	9 1	—	9·1	27 3	—	9 1	9 1	—	—	—	—	—
46-50	9	11 1	22 2	11 1	22 2	—	11 1	22 2	44 5	22 2	11 1	22 2	44 5	11 1	—	—	11 1	11 1	—	11 1	—	11 1	—	—	—
51-55	4	—	—	25	—	50	—	25	—	50	—	25	25	—	—	—	25	25	—	50	—	—	—	—	—
56-60	2	—	100	50	—	—	—	50	—	50	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—
61-65	2	—	—	—	50	50	—	—	—	50	—	—	—	—	—	—	50	50	—	—	—	50	—	—	—
Total number of cases	310	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total percentage for each group of units.	Typhoid ..	2 9	—	—	7 5	—	—	13 3	—	—	27 7	—	—	13 7	—	—	17 1	—	—	17 7	—	—	—	—	—
	Para. A ..	—	13 6	—	—	15·2	—	—	26 8	—	—	30	—	—	6 1	—	—	4 5	—	—	2 9	—	—	0 9	—
	Para. B	—	—	9	—	—	5 4	—	—	22·5	—	—	40	—	—	14 1	—	—	4 6	—	—	3 9	—	—	0·6

immunity developed after two or more weeks is the same for single as for mixed emulsions. From the clinical stand point, however, Coppinger and Gibson found that when the triple vaccine was used the reaction begins earlier and is more intense than when the single typhoid emulsion is injected

During an acute attack of paratyphoid fever in a man previously inoculated with typhoid vaccine the inoculation typhoid titre is very frequently increased[1] The figures we include in Table III suggest that an increase in the inoculation typhoid titre occurs also in the presence of inoculation agglutinins induced by the injection of para A and B bacilli In 310 men in whose blood there appeared all the three agglutinins and who had not been the subjects of typhoid paratyphoidal infection, the typhoid units yielded a larger percentage of high units than were met with in 617 other men who had been inoculated with typhoid bacilli only

TABLE III —*Inoculation Agglutination Titres for Typhoid Bacilli*

—	No of cases	Units Under 3	3-15	15-35	35-65	65-150	150-350	350-650	650-1250
Inoculation— With typhoid only									
1915-16 A	263	2 4	15 3	29·9	23·2	19·5	5 1	4·0	0·6
1915-16 B	77	3·9	9·1	15·6	22·1	23 5	13	2·6	5 2
1916-17	272	10·7	12 5	16 9	16·9	19·5	11	4·8	7 7
With typhoid and para A and para. B									
1916-17	310	—	2·9	7·5	13 3	27 7	13 7	17 1	17 7

Whether the typhoid agglutinin interacts similarly with the paratyphoid agglutinin production is a problem upon which we cannot offer any evidence at the moment, but the subject seems worthy of inquiry and we have accordingly instituted experiments towards its elucidation

Agglutinin Units following the Injection of Triple Vaccine in 356 Men

The findings so far discussed relate chiefly to the inter action of agglutinins There remains still the broader question of the general bulk results which have been yielded by sera obtained from men inoculated with the triple typhoid para. A and B vaccine Here we have considerable difficulty in presenting any complete survey as it has not been possible always to obtain a precise account of the type of vaccine injected Making use however of the general statement that the triple vaccine came into widespread employment in the early days of 1916 we have been able to present a rough account of the agglutination units determined Had we been dealing with the acute phases of the diseases which caused the home coming of the men, we should have found it more easy to place certain anomalous instances within definite categories It was necessary to rely on experience and intuition in these cases to a greater extent than we care to do, but it seems worth while, perhaps, to attach Table IV as a rough estimate of the success and failure of response to the triple vaccine The negative findings are placed under the heading of "Less than 3" units of agglutinin although the majority of these failed to give agglutination in dilutions of 1 in 10 serum Speaking generally, the typhoid negatives are fewer than those met with after the injection of the single vaccine, while those following para A and B are more numerous

TABLE IV

Agglutination Units after Use of Triple Vaccine 356 men

		Per cent
Cases showing triple inoculation agglutination units ..	310	87 1
" in which typhoid yields under 3 units	1 ..	0 3
Para. A " ..	15	4 2
Para. B	30	8 4
Total	356	100

Relation of Low Units to Weeks since Inoculation

Weeks since inoculation	Typhoid	Para A.	Para. B	Weeks since inoculation	Typhoid	Para A.	Para. B
6-10	—	1	1	36-40	—	2	1
11-15	—	2	2	41-45	—	0	2
16-20	—	1	10	46-50	—	1	—
21-25	—	2	5	51-55	—	1	—
26-30	—	3	4	56-60	1	1	—
31-35	—	1	5	Totals	1	15	30

We thank Lieutenant-Colonel J P Bush, C M G, Lieutenant-Colonel J Michell Clarke, and the whole of the staff of the Second Southern General Hospital, for the facilities they have so kindly provided

Summary

1 Additional observations upon the inoculation agglutinins following injection of killed typhoid bacilli are recorded They confirm previous statements

2. The agglutinin content after injection of the triple vaccine shows the response to be as persistent as when the single vaccine is employed The units for paratyphoid A are the lowest next comes paratyphoid B and finally typhoid bacillus

3 When compared with the results following inoculation with *B typhosus* only the use of the triple vaccine is associated with an increased number of typhoid agglutinin units

4 These findings in bulk confirm for man the observations which Dreyer and Ainley Walker record in their

adhesive to allow for drainings and the re insertion of the Carrel tubes These strips had to be reapplied once daily

At each dressing the Carrel tubes leading inside the abdomen were gently twisted round and slightly withdrawn through the outer large drains They were then fixed by safety pins as before, and the Dakin fluid was then turned on through the connexions for a few seconds It was observed that on doing this in the first half dozen dressings a copious amount of pus was washed out through the large drains By gently moving the Carrel tube the coagulum at the inner end of the large drain was dislodged, and any free exudate was then washed out by the fluid from the Carrel tube Gradually each day the Carrel tubes were drawn out, until at the end of 18 days (May 6th) all four were removed and the four small drainage wounds allowed to close.

Calomel, gr 1/6, was administered six hourly for two days Thereafter the patient obtained a natural action of the bowels and only once had an attack of colic, due probably to an indiscretion of diet On April 20th, two days after the operation, patient's blood was examined and the count showed as follows Polymorphonuclears, 52 5 , eosinophiles, 5 5, granular basophiles, 3 0, large hyalines, 12 0, and lymphocytes, 27 0 per cent Leucocytes, 20 000

Thirty three days after the operation, having made an excellent recovery, patient proceeded to England.

Remarks —To sum up, the case appears to us to present certain points of interest 1 Patient had already, prior to the operation for generalised peritonitis, undergone a laparotomy for a gunshot wound, with suture of several holes in the gut and mesentery 2 At the time of the second operation his condition was undoubtedly grave 3 The bacteriological findings at the time of the second operation pointed to a virulent infection 4 His leucocyte reaction determined on the second day after his second operation pointed to a strong resistance

There is no doubt that the bursting of the abscess in the rectus sheath was the cause of the diffuse peritonitis There may be room for doubt that the abscess was a suture abscess There is, however, little doubt that the infection *first developed* in the abdominal wall, originating either from within from contamination of the perforated gut, or from without from skin infection

The ultimate excellent recovery, without for the moment considering Carrel Dakin treatment, pointed to the fact that the first operation had been successful so far as repairing lesions in the gut was concerned One is quite aware that even the worst cases of peritonitis sometimes go straight ahead after operation, but the clinical picture and the whole facts of the case point strongly to something more than coincidence here, and suggest the further investigation of the Carrel technique applied to the peritoneal cavity

INOCULATION AGGLUTININS

BY I WALKER HALL, M D VICT ,
HONORARY CONSULTING PATHOLOGIST TO THE SECOND SOUTHERN GENERAL HOSPITAL PROFESSOR OF PATHOLOGY BRISTOL UNIVERSITY
With the Assistance of
I HILES, M SC , AND F NICHOLLS

(*Report to the Medical Research Committee*)

IN an earlier communication we recorded the agglutination titres observed in some individuals who had been inoculated previously with antityphoid vaccine We also gave an account of the interaction of inoculation and infective agglutinins during the acute phases of paratyphoid fevers, and stated the results of concomitant absorption experiments which supported the views of Grattan Wood, Harvey, Dreyer and others, that the presence of infective paratyphoid agglutinins is associated with a tissue stimulation which brings about a rise in the agglutinins induced by the prior injection of killed typhoid bacilli [1]

The advent of a number of convalescents who had been inoculated with the triple typhoid, para A and para B vaccine, afforded an opportunity for determinations of the extent and persistence of the inoculation agglutinins thereby occasioned and permitted an inquiry into their interaction

The results now appended seem to suggest that the inoculation agglutinins which appear in the blood after the injection of dead typhoid, para A and para B bacilli tend to raise the titre for typhoid bacilli above that which follows when typhoid bacilli alone are employed, and that these titres are specific absorption titres and not due to co-agglutination

Methods —The methods throughout were precisely the same standardised procedures as those stated in our communication to the *Journal of the Royal Army Medical Corps* in September, 1916

Inoculation Agglutinins for B Typhosus *only*

In 272 additional cases the single typhoid vaccine had been given and the results allowed comparison with similar findings in a further 77 cases inoculated before 1916, and another set of 268 cases examined in 1915–16 (Tables I and III) The figures in each lot are somewhat similar, although those for 1916 exhibit a larger number of negatives and a higher percentage of units over 650

TABLE I —*Typhoid Inoculation Agglutination Units per c c of Serum in Cases not Clinically Enteric*

Inoculated 1916–17

Weeks since inoculation	No of cases	Units Under 3	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
1–10	13	—	—	5	16 6	48 3	20	5	5
11–20	60	3 7	7 3	11 15	21·05	22 15	10·2	6 25	12·8
21–30	69	5·7	5·55	20·05	18 85	26 4	11·85	5·8	5·8
31–40	62	9 4	19·6	27	15 45	13 6	7 55	3 4	4
41–50	32	18 3	19·05	19·05	13 48	11 1	16·25	—	2·77
51–60	32	31·2	23·2	—	16 75	14 35	6·25	2 65	6 6
61–70	4	25	25	25	—	—	—	25	—
Totals	272	10 7	12 5	16·9	16·9	19 5	11	4 8	7 7

Inoculated before 1916

Weeks since inoculation	No of cases	Units Under 3	3–15	15–35	35–65	65–150	150–350	350–650	650–1250
31–40	6	—	66 6	—	16 6	16 6	—	—	—
41–50	9	—	—	11 1	22 2	11 1	33 3	11 1	11 1
51–60	24	4 2	12 5	16 6	29 1	25	4·2	4 2	4 2
61–70	38	5 3	—	18 4	18 4	36 8	15 8	—	5 3
Totals	77	3·9	9 1	15 6	22 1	28 5	13	2·6	5 2

Inoculation Agglutinins for B Typhosus *and* B Paratyphosus A *and* B

In Table II the titres obtained from the blood of 310 convalescents are incorporated These men had all been injected with the triple vaccine It will be seen that the units for *B typhosus* show a larger number of higher positives than those found when the single vaccine was injected (Tables I and III) The para. A and B units differ considerably, those of para A being uniformly lower than the para *B* but in both instances the extent and persistence of the agglutinative capacity are greater than what we had been led to expect from previous animal and human experiments [4 1]

The question, therefore, arises as to the respective parts played by the interacting stimuli emitted by the three types of bacterial protein It is generally accepted that during infection, and also after inoculation with para. A bacilli, the agglutinin response is meagre and does not persist for a long period, while both typhoid and para B infections and injections evoke a response in agglutinative capacity which is high and continued The figures we now present however denote a considerable amount of agglutinin content for paratyphoid A and an apparently good immunity at the end of 12 months Is this difference between the experimental infection and inoculation agglutinin and the specific inoculation agglutinin following injections of triple vaccine an expression of the group stimulation of the tissues by the action of the cleavage of dead typhoid or para B bacilli, or due to some other factor? The answer to this query might confirm the practice of combining the three emulsions at one injection or point to the advantages of single and separate injections We hope to bring forward some evidence bearing upon this problem in a later communication

The Interaction of the Typhoid and Paratyphoid Agglutinins

The response to the injection of single vaccines is said to be more rapid than that which follows inoculation with a mixed vaccine This has been established by Castellani for typhoid and paratyphoid bacilli [2] and by Freeman for typhoid and cholera organisms [3] But the extent of

Reviews and Notices of Books.

The Thyroid Gland in Health and Disease By ROBERT MCCARRISON M D R.U I D Sc Belf., F R.C P Lond , Major, Indian Medical Service , Lauréat de l'Académie de Médecine Paris With numerous illustrations London Baillière, Tindall, and Cox. 1917 Pp 286 Price 12*s* 6*d* net

FROM the time of Hippocrates and Aristotle onwards impure drinking water has been held by the majority of physicians to be the cause of goitre But it is only within comparatively recent years that we have approached a precise knowledge of the ultimate causes of disease of the thyroid parathyroid glands by the correlation of facts and inferences based upon the results of experiments upon animals, clinico-anatomical observations upon man, and epidemiological investigations It is a great satisfaction to recall the fact that many British physicians and physiologists have acted as pioneers in important contributions to our knowledge of the thyroid gland in health and disease, and we welcome this latest valuable pioneer work of Major McCarrison, which sets forth in a lucid comprehensive, and interesting manner a subject which he has studied experimentally, epidemiologically, and by clinico-anatomical observations for the past 14 years During this time he has contributed numerous original papers to medical journals and societies, including the Proceedings of the Royal Society, bearing upon goitre and allied subjects Major McCarrison speaks authoritatively as a physician of experience, and throughout all three parts into which the work is divided there is exhibited a most extensive knowledge of the literature

The first section deals with the thyroid and parathyroid glands in health , the second with the factors which cause them to depart from health , and the third with the morbid states of goitre and cretinism, tetany, *myxœdema*, and exophthalmic goitre In the appendix there are two series of cases showing the effects of intestinal antiseptics on goitre as well as a brief summary of the author's more noteworthy epidemiological and *experimental observations*

In reviewing this important contribution to medical literature we shall best serve the interest of the profession by briefly referring to Major McCarrison's conclusions regarding the causation, prevention, and treatment of endemic goitre, a subject of great importance seeing that "in India at the present time there are not less than five million persons afflicted with goitre while half a million is a low estimate of the number who suffer from its congenital manifestations " It was generally believed that permanent hardness of the water was the cause of goitre—e g , Derbyshire neck was *attributed to this* , while not denying that it may be to some extent a contributory *factor*, Major McCarrison's observations show that it is not an essential cause Within recent years the many theories as to the causation of endemic goitre have been reduced to the following (1) Chemical ingredients of drinking water, (2) geological peculiarities of the soil imparting to the soil a specific colloidal poison , (3) faulty nutrition , (4) living micro organisms The author *claims that his* experimental and epidemiological observations prove that living organisms are the essential cause of the disease and he puts forward the *following premises as* proof that fæcal contamination of the water supply by a living and *specific* micro-organism is the cause of goitre 1 In villages where goitre prevails this disease shows a steady increase in proportion to those conditions which increase *the impurity* of the water by fæcal contamination 2 He claims to have produced goitre experimentally in man by ingestion of the residue left on the *candle* of a Berkefeld filter after filtration of goitrigenous water This residue when boiled does not cause goitre 3 The administration of beta naphthol and thymol and other intestinal antiseptics may cause the disappearance of the goitre *in* young subjects 4 The researches on trout by Marine Lenhart and Gaylord demonstrate that fish confined in tanks one above the other on a single water supply exhibit an increasing thyroid hyperplasia in the series from above down 5 He claims to have produced goitre in rats and goats by feeding them on fæcal material from goitrous and even non goitrous subjects , also from cultures, aerobic and anaerobic. The anaerobic are the more potent 6 Congenital goitre with cretinism and parathyroid disease can be produced experimentally by feeding the mothers throughout *pregnancy* with these cultures Photographs of men and animals and photomicrographs of sections of the glands are given Finally, Major McCarrison claims that vaccines prepared from intestinal organisms are capable of causing the disappearance *of recent* cases of goitre when injected in appropriate doses at weekly intervals We are of opinion, however, that further observations will have to be made before the value of autogenous vaccines in the treatment of goitre can be accepted as proven With regard *to the infective organism* Major McCarrison claims that it lives in the soil of infected localities, and particularly in soil which contains a high proportion of organic matter of human or animal origin It seems that ' the great source of the disease is the infected individual, and that he is the producer, the reservoir, and the distributor or 'carrier' of the infecting agents " The author, therefore, implies that there is a specific organism capable of producing goitre, which exists in man living in districts where goitre is *endemic* This *organism* has not been isolated and obtained in pure culture , in fact, the observations on trout would seem to point to the fact that normal organisms of the fæces passing through the intestinal canal of this fish acquire an *increased* '*toxic influence on the thyroid gland* In the author s experiments on rats he states that ingestion of fæcal material from even non goitrous subjects will produce goitre, which rather militates against his experiments, proving that there is a specific goitrigenous infective organism Major McCarrison has shown that in mountain villages where one is situated above another there is a correlation between the increase of fæcal contamination of the water-supply and the prevalence of goitre Might it not be worth while to make plate cultures and counts of the different fæcal organisms in the water supply of a series of such villages ? It would also be of interest to ascertain whether there was any modification, morphological or cultural, in the organisms found in the water supply to the villages where goitre is most prevalent

It is interesting to note that the author does not consider that Graves's disease is the direct outcome of the flooding of the organism with thyroid substance, as it is stated to be by Biedl According to Major McCarrison it is not the escape of excess of the thyroid secretion which is at fault, but a bacterial toxin which stimulates the gland to increased activity The remedy, therefore is to seek the source of the bacterial toxin and eliminate it He enters a protest against the tendency of some surgeons to operate in all early cases as a routine procedure

We can cordially commend this valuable work, so rich in original thought and observation Naturally all the links of the chain of evidence upon which our present knowledge of thyroid-parathyroid disease is founded are not of equal strength and probable durability Some of the links contributed by the author will require strengthening by further investigation and by confirmation of independent observers

The book is interesting in style and lucid in exposition, is well printed and illustrated We congratulate the author on having made a noteworthy contribution to British medicine

LIBRARY TABLE

Daily Drill for the Voice By ROSE I PATRY Published by the author at 3 Lower Seymour street Portman square, London W —In this pamphlet on voice management Miss Patry has done a sound and useful piece of work. The want of skilled attention for sufferers from shell shock has been keenly felt by those coming in contact with them There is not only the need for medical help but for help from persons skilled in voice production and voice correction There are difficulties in the way of supplying the latter kind of assistance to many of the victims who require it most and the possibility of helping themselves, as indicated in "Daily Drill for the Voice ' will be most useful information The book contains six groups of exercises for control of breath, voice and body graded with obvious precision Exercises in regular control of the breath and in use of the voice are combined with movements of the arms ribs chest and with such ordinary movements as writing walking rising from a seat so that the recovered or corrected voice is from the first placed in the circumstances of experiments upon rabbits—namely that after immunisation with dead *B coli*, the subsequent injection of killed emulsions of *Staphylococcus aureus*, the bacillus of Friedländer, or a streptococcus increases the production of the specific primary agglutinins, so long as the animal retains any measurable degree of acquired immunity[5] Perhaps the figures may be interpreted so as to carry the matter a little further and to suggest that inoculations with allied, or group, organisms point to the probability that typhoid and paratyphoid bacilli differ so much in their essential metabolism as to classify them individually as heterologous organisms The results of our previous absorption experiments and their inferences as to the absence of co-agglutinins in sera containing mixed antibodies lend support to the surmise[1]

Literature.—1 Walker Hall Journal of R.A.M.C September 1916 (with literature) 2. Castellani *Soc of Trop Med.* and Hyg November 1915 3 Freeman Ibid. 4 Coppinger and Gibson *Journal of R.A.M C* 1916 p 581 and Harvey and Gibson: Ibid 1915 p 525 and Cummins and Cumming: Ibid. October 1912, and September 1913 6 Dreyer and Ainley Walker Journal of Path and Bact, xiv 39 6 Hachtel and Stoner: *Journ of Infect Diseases*, 1916 19 p 322

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

A CASE OF VINCENT'S INFECTION INVOLVING MOUTH, EYES, AND PENIS

BY F B BOWMAN, M B TOR,
MAJOR C A.M.C O C NO 2 CANADIAN MOBILE LABORATORY

SINCE publishing a preliminary report on "Infectious Stomatitis among Troops" in 1916[1] many cases of this serious condition have been seen That cited here would seem to be of sufficient interest to warrant an individual report

Case history—Captain ——, aged 30 Always had good health until the present illness occurred About March 1st, 1917, he noticed that he began to lose his voice He does not describe any pain in connexion with this, but it seemed to be due to a sense of constriction in the throat The glands in the neck were not tender The condition gradually became worse, and on March 15th, when instructing a party in trench work at night, he had a severe chill and a cough developed He then noticed soreness of the eyes with watering and had great tenderness of the gums On March 19th he was admitted to hospital

Examination on admission—Temperature 102° F Greatly depressed, feels chilly, and can eat nothing but fluids because of the soreness of the lips and inside of the mouth He was seen by me on March 21st Examination showed a very severe conjunctivitis, with a large amount of thin discharge present containing flakes of whitish material, the conjunctivæ were red, a certain amount of photophobia present The mouth was half opened and the lips covered with angry herpetic looking ulcers, some of which were covered with a fragile whitish membrane These seemed to be confined to the lips, and had not extended to the surrounding skin On account of the pain it was impossible to open the mouth, and it was very difficult to retract the lips The gums were reddened, the teeth bathed in pus and pressure on the gums caused severe bleeding The hard palate was covered by a whitish membrane, which came away easily, leaving a bleeding surface The throat, which could be seen only partially, was covered with a membrane also but there was no evidence of any deep ulceration Smears were made from the eyes and from the ulcerated areas in the mouth, as well as from the gums These showed large numbers of Vincent's organisms (*spirochætæ and fusiform bacilli*)

A mixture of arsenic and ipecac, as recommended in a previous paper, was used three times daily as an application to the gums and lips, and also as a mouth wash Boracic compresses were advised for the eyes In 24 hours the mouth felt "easier," although it was impossible to open the lips After three days from the time that I had first examined him the patient confided in me that he had a peculiar sore on the penis and this on examination was found to be a small red ulcer with a membrane over it surrounding the meatus Smears showed Vincent's organisms present in large numbers For treatment the same solution as that used in the mouth was applied on a small pad of cotton wool, and changed three or four times a day The ulcerated area was completely healed within a week The Wassermann reaction was negative on two occasions During the second week after admission the patient developed a severe pleuritis, with a fairly large amount of fluid present, but this apparently was simply coincident, and had no relation to the other conditions described here, although the chill and cough, which developed early in the disease, were the first signs of pleuritis

When last seen by me the mouth, eyes, and penis were entirely healed, and the marked depression which was present at first had disappeared This was one month after his admission to the hospital

Summary—The case reported here is particularly interesting from the fact that three separate and distinct areas covered by mucous membrane were infected by Vincent's organisms The primary infection was probably in the mouth and had been transferred to the glans penis and conjunctivæ by means of the fingers Treatment with the following prescription as a mouth wash with directions that the mixture should not be swallowed, quickly cleared up the condition —

℞ Vin ipecacuanhæ ℥ ss
Glycerini ʒ j
Liq arsenicalis ad ℥ j

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[1] Proceedings of the Royal Society of Medicine 1916, vol ix (Medical Section) pp 51–60

ANOTHER CASE OF MALARIA CONTRACTED IN ENGLAND

BY R LOY WILCOX, M.R C S, L R C P LOND,
SENIOR ASSISTANT MEDICAL OFFICER PARK HOSPITAL, LEWISHAM S.E

G T, aged 20 years, had an abdominal operation at Salonica for wounds received in action on Nov 28th, 1916, but has been in this country for over three months He was admitted to the Park Hospital certified to be suffering from scarlet fever on July 27th, with the history of vomiting and sore throat on the previous day

On admission he had a faint punctate erythema, the tongue was heavily furred, and the fauces were swollen and injected The temperature was 104°F, but there was no rigor The temperature continued irregular and at midnight July 30th–31st was 104°, but again there was no rigor It was normal on the morning of July 31st and remained normal until 7 15 P M on August 1st when the first rigor occurred, the temperature rising to 104° By midnight it was normal again A careful examination of heart and lungs revealed nothing abnormal

On August 3rd, at 2 30 P M, he awoke from his sleep and asked for a hot drink as he thought an attack was coming on A rigor followed immediately, and then malaria was thought to be the cause of the trouble, and the man, who had previously been taking sodium salicylate, was put on quinine sulphate 3 gr every four hours Another rigor occurred on the 5th, and the dose of quinine was increased to 6 gr every four hours Afterwards there were no more rigors and the man rapidly became convalescent On the 9th the dose of quinine was reduced to 3 gr every four hours, and on the 13th it was omitted altogether A blood film taken during the height of an attack was kindly examined by the pathologist of the military hospital from which the man came and he reported that the tertian parasite was present.

The rash present on admission disappeared in a day or two and as neither the tongue showed any trace of peeling at any time nor was any desquamation seen the diagnosis of scarlet fever was abandoned and the man discharged well on August 21st

I am indebted to Dr T F Ricketts, medical superintendent, for permission to publish this case

THE Local Government Board has approved of the appointment by the Bournemouth town council of Mr William Bertram Lawrence as tuberculosis officer for the period of the war subject to his services not being further required by the War Office

MEMORIAL BED TO THE LATE MR JOHN PLATTS—As a memorial to the late Mr John Platts his sister and legatee, Mrs M A Shipley has endowed a bed in the wards of the Leicester Royal Infirmary Mr Platts was a well known representative of the firm of Messrs Southall Brothers and Barclay, manufacturing chemists Birmingham and for many years was closely associated with medical work in the neighbourhood of the hospital This fact is recorded on a memorial plate over the bed

Reviews and Notices of Books.

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The book is interesting in style and lucid in exposition, is well printed and illustrated We congratulate the author on having made a noteworthy contribution to British medicine

LIBRARY TABLE

Daily Drill for the Voice By ROSE I PATRY Published by the author at 3 Lower Seymour street Portman square, London W —In this pamphlet on voice management Miss Patry has done a sound and useful piece of work The want of skilled attention for sufferers from shell shock has been keenly felt by those coming in contact with them There is not only the need for medical help but for help from persons skilled in voice production and voice-correction There are difficulties in the way of supplying the latter kind of assistance to many of the victims who require it most and the possibility of helping themselves as indicated in Daily Drill for the Voice will be most useful information The book contains six groups of exercises for control of breath voice and body graded with obvious pre ercises in regular control of the breath and oice are combined with movements of t ct and with such ordinary movement ng rising from a sea so that the voice is from the first placed i daily life Care, too, has been given to the amount of mental effort required in performing the exercises, the early ones being more mechanical than the late ones One point that might offer some difficulty to the inexperienced reader is the exact meaning of "the initial sound" of a consonant A list of the phonetic sounds as used in the pamphlet might with advantage have been added to the introductory directions and so have removed any doubt on the part of the learner Thus we should have had explained such an exercise as "Make the shape of the mouth of the following consonants W, W, W " To the uninitiated what is the shape of the mouth for "W"? The pamphlet contains no exercises dealing with such sounds as "th," "sh," "ch," "j," or difficult combinations, e g, "pl," "gr," "st," "sk," which leads us to suggest that Miss Patry should produce a sequel in the shape of a series of exercises of a higher standard of difficulty Meanwhile any soldier or sailor whose speech is affected may derive invaluable benefit by using "Daily Drill for the Voice"

A Farmer in Serbia By ELLEN CHIVERS DAVIES London Methuen and Co 1917 Pp 248 Price 6*s* net — This is a very readable book, composed to some extent of articles which have been contributed to the *Manchester Guardian*, the *Morning Post*, and the *Yorkshire Post* enlarged into a diary, bearing dates from the first summer of the war until the time when Bulgarian defection led to the over running of Serbia by the enemy The book tells an interesting and pathetic story simply but quite poetically It is easy to realise the beauty of the scenes in which many of the struggles were enacted, as well as to comprehend what a horrible tragedy it was that the Allies were unable to make good the Serbian resistance The proceeds of the sale of the book will be given to the Serbian Relief Fund

Health Survey of New Haven Yale University Press New Haven Connecticut 1917 Pp 144 Price 75 cents net —This Survey was prepared at the request of the Civic Federation of New Haven and is now published in pamphlet form by Yale University, the cost being defrayed from the Anna M R Lauder Memorial Foundation in the Yale School of Medicine The record of an exhaustive sanitary survey is extremely practical, and each description of existing positions is followed by a definite recommendation where a method of reform has suggested itself to the authors The one essential need made clear by their investigations is that of providing the health department of the city with six efficient and well-qualified divisional directors, who could supervise the work of their subordinates and aid the health officer in the organisation and development of particular lines of energy The expansions of the work of the department of health which appear cardinally essential to the authors include the re arrangement of the work of the Board of Health, the strengthening of the various staffs with a more reasonable division of their labours, the reorganisation of school inspection with the provision of school clinics, and the appointment of an expert on tuberculosis to develop a campaign against the disease The cost of the suggested additions are estimated at about £7000 a year, an increase of per capita expenditure for health work in the city from 26 to 48 cents annually This strikes us as being a remarkably moderate figure The public health authorities of English cities having a comparable population of something between 100,000 and 150 000 might with advantage study this well arranged pamphlet All the modern problems of preventive medicine receive notice, and in many places there are indications for reform which would be as applicable in a British as in an American city

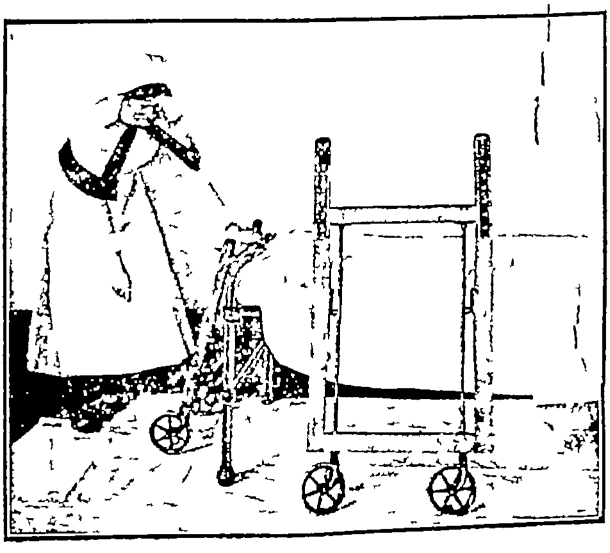
Manual of Chemistry By W SIMON, Ph D, M D and DANIEL BASE, Ph D Eleventh edition thoroughly revised London Baillière Tindall, and Cox. 1917 Pp xvi + 648 Price 18*s* net —In the preparation of this edition the chief change made has been the omission of the chapters on light and electricity of the previous editions, though the articles on the spectroscope and the polariscope have been retained, since their applications in analytical work are indispensable This course has made room for much new matter, particularly in the first subdivision of Section II dealing with the non metals In this section some space is given to an account of reversible reactions and chemical equilibrium In previous notices of this book we have always expressed an appreciation of its clearness of statement, its logical sequence of facts, its remarkable coloured illustrations of tests and its general soundness on both theoretical and practical questions The student in the laboratory will find this book of considerable service, even though he be a beginner

A Laboratory Manual of Organic Chemistry for Medical Students By MATHEW STEEL, Ph D New York John Wiley and Sons, Inc London Chapman and Hall, Limited 1916 Price 6*s* net Pp 193 —A useful series of tests is here given for more or less familiar organic substances, setting forth their properties as well as those reactions which serve for their detection Particular attention has been given to the selection of experiments which are of special interest to medical students The sections on alkaloids proteins, amines and amides are the best examples of this plan In the directions given in making the tests the use of definite quantities of reagents is enjoined, which has the double advantage of obviating waste of material, and of securing a satisfactory response to the test The book presents a sound practical course of laboratory teaching confined to organic substances

New Inventions.

THE "TOWNSEND LOCK" BED LIFT AND TRANSPORTER.

RECENTLY we noticed two devices for moving the sick and their beds We here describe a bed lift and transporter which is the invention of two members of the Inquiry Bureau of the 2nd Southern General and Beaufort War Hospitals, Bristol, and their Auxiliaries The apparatus is simple light, strong, and effective and affords a ready means of wheeling a patient in bed, without any jarring or discomfort, into the open air, even over grass or uneven ground As will be seen from the illustration, the invention consists of two square frames (one for the head and one for the foot of the bed) running on swivelled rubber tyred wheels. The frames are hooked under the top bar of the bed which is levered up by pushing forward the bottom of the frame The frame is then clamped securely in position by hooks sliding on its face No lifting is required, the leverage being equal to any normal load on the bed and the adjustments can be made in about 15 seconds The apparatus is adjustable, and can be fitted to almost any ordinary hospital bed



Any proceeds resulting from the commercial use of this invention, which is priced at £4 10*s*, will be devoted to the funds of the Inquiry Bureau Only one set of frames is required for any number of beds

Further details may be obtained from the Honorary Secretary, Inquiry Bureau 39, Broad street, Bristol

At The Front–

Since the beginning of the war tens of thousands of packages of

Antiphlogistine

have been used in the Hospitals of France alone

Physicians and surgeons in His Majesty's service on duty in France should bear in mind that Antiphlogistine obtained from our Paris Laboratory, No 116 Rue de la Convention, is composed of the same C P ingredients and compounded according to the same formula as the British Antiphlogistine, made at No 41 St Ann's Road, Bow, London, E 3

THE DENVER CHEMICAL MFG COMPANY
BOW, LONDON, E 3

THE TREATMENT OF VENEREAL DISEASES.

Recurrent Fever
SYPHILIS

GALYL

Frambœsia
Sleeping Sickness

GALYL is as effective as SALVARSAN or NEOSALVARSAN on Spirochætes and Trypanosomes, more rapid in action, and free from the neurotropic and congestive action of these preparations

FOR INTRAVENOUS INJECTIONS — (Fig 1)

(1) DILUTE.—GALYL is supplied in neutral glass ampoules containing the necessary dose of Sodium Carbonate sterile distilled water only being used for the dissolution.

(2) CONCENTRATED —A special outfit containing one dose GALYL, one ampoule sterilised solution and one small filter is supplied

DOSES.
0 20—0 25—0 30—0·35—0 40

(3) FOR INTRAMUSCULAR INJECTIONS — (Fig 2)

GALYL is supplied in GLUCOSE SOLUTION

DOSES
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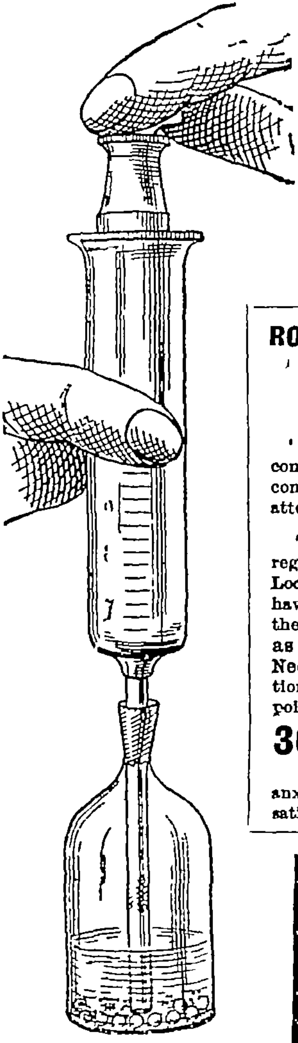

Fig 1.

ROYAL COMMISSION ON VENEREAL DISEASES.

Final Report of the Commissioners

SUBSTITUTES FOR SALVARSAN

" another French substitute **GALYL**, a compound of arsenic and phosphorus has recently come into prominence and its use has been attended with considerable success

' Favourable reports have also been obtained regarding the preparation **GALYL**. At the Male Lock Hospital 1000 injections of this substance have been administered and it is reported that they have been attended with as good results as in the cases treated by Salvarsan and Neosalvarsan in no instance were the injections followed by reactions indicative of arsenic poisoning "

3000 injections (intravenous) were given in one of our Service Hospitals

No case has given the slightest cause for anxiety and the clinical results are very satisfactory *Staff Surgeon's Report*

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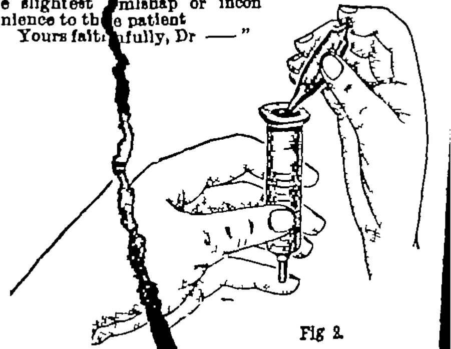

Fig 2.

The technique is simple

Fig 2 shows the ampoule of Galyl being emptied into the syringe barrel—the needle is now fixed on the neck of the syringe and the plunger inserted into the barrel. The injection is then ready for administration.

HECTARGYRE

(Mercurial Salt of Hectine)

ARSENIO-MERCURIAL TREATMENT

Hectine is a soluble Arsenical derivative with an extremely low toxicity and combined with mercury is well tolerated even where prolonged treatment is necessary such as severe cases of intractable Syphilis, in which it has yielded highly

FURTHER LITERATURE ON REQUEST

ARSENIO-MERCURIAL TREATMENT

SATISFACTORY CLINICAL RESULT

As a treatment follow ing GALYL, or ab in all stages of the disease Hectargyre is very effective and rapid The injections give no pain

FOR INTERNAL ADMINISTRATION

Hectargyre
Hectarg

THE ANGLO-FRENCH DRUG CO, Ltd, Gamage Building, LONDO

Telephone HOLBORN 1311 (Late M BRESILLON & Co) Telegram PSALVAS

THE LANCET.

LONDON SATURDAY OCTOBER 6, 1917

The Treatment of Wounds in War

Professor W W KEEN has not been at the front, but in his eightieth year he is a surgeon of large experience and breadth of view, and his report[1] on the treatment of war wounds, compiled at the request of the National Research Council of America, will be studied with profit by many whose daily work brings them in contact with the wounds of war and with the controversies thereon arising The Atlantic, while reducing magnification, may at the same time improve perspective After three years of fighting the number of different methods of treating wounds is still so great as to prove that there can be no one preferable technique, and this would be expected when we remember the diversity of circumstances and environment in which the injuries are inflicted. General principles may evolve, though a one and only procedure need not be expected But many of the new remedies brought forward during the war have been acclaimed by their inventors as almost a panacea for all sorts and conditions of wounds, and that there is no small amount of truth in many of the claims that are made proves simply that in dealing with an enormous mass of wounded material large groups having similar manifestations have been found. Various new conditions have been met with, and the new lines of treatment have been devised for the most part to deal with these new conditions The sepsis seen in many of the wounds in the present war is of a virulence rarely if ever encountered in civil practice and almost unknown in previous campaigns Gas gangrene and tetanus were rife in the early months of the war The long interval between the infliction of the injury and even the first dressing, which in some sections of the line was bound to occur, led only too often to the penetration of microbes deeply into the wounds, and when close trench war prevailed everywhere great difficulties were experienced in bringing in the wounded But now that the movement on the western front, which we are considering to day, is towards the east always, so that the ground over which the advance is being made remains in our hands, the wounded receive aid much earlier than was formerly the case, and some of the older problems have disappeared

The skill and inventiveness of the army surgeons, their civil colleagues, and the pathologists have been exercised to the utmost, and the results of treatment have steadily improved Tetanus has almost disappeared every wounded man receives one or more doses of antitetanic serum as a matter of routine, and the effect is intensely striking to all workers in military hospitals The treatment of gas gangrene presented what our American allies would term 'a tough proposition Various methods were proposed and tried, but until recently—sad to think'—the safest treatment too often was to perform a flapless amputation, so that the perfect drainage and the exposure of the anaerobic organism to the air led to its elimination. Now the claim has been made for a new serum that it will deal as effectively with gas gangene as the tetanus antitoxin deals with tetanus If this claim should prove well founded, a valuable addition will have been made to our armamentarium, and we hope that further work in this direction may clear up all the doubts For the treatment of wounds infected with the ordinary pyogenic organisms many procedures have been devised One of the most valuable methods of lessening the sepsis, and one which often permits of healing by first intention, is excision of the wound so that a large proportion of the entrant micro organisms is mechanically removed, while the tissues damaged by the toxins are taken away and clean healthy tissues are brought together Even though a true union by first intention may not always be obtained, yet the suppurative process is immensely weakened, and healing is promoted The whole work of Sir ALMROTH WRIGHT in these directions has tended towards simplification and towards a scientific comprehension of the underlying pathology of the conditions met with For the treatment of wounds which have already become infected, but cannot from their extent be excised, Sir ALMROTH WRIGHT'S researches have been invaluable, while two methods have emerged to which the authors names have been properly attached CARREL'S method of using DAKIN'S hypochlorite solution, and RUTHERFORD MORISON'S employment of "B I.P.P," although differing widely in the means employed, are both undoubtedly effective in preventing and reducing sepsis in wounds, and each has proved useful in promoting their healing By the Carrel method it is claimed that in nearly all cases of wounds in which the infection has not progressed too far it is possible by the regular instillation of the hypochlorite solution to render the wound germ free within a week or two, and the asepsis is guaranteed by a bacteriological test, and when this aseptic stage is reached the wound may be sutured and it will heal without suppuration The Carrel method is the only one described in detail by Professor KEEN, as, judging by published statements, he finds the results superior to those of any other method The work of Dr A DEPAGE on compound fractures at La Panne has specially impressed him The "B I P.P' treatment consists in filling the wound with a paste of bismuth subnitrate, iodoform, and paraffin, and when it is closed with sutures in many cases the wound heals rapidly with a minimum of suppuration

In the present issue of THE LANCET appears a paper by Major JAMES PHILLIPS R A M C, who has worked at the Bradford War Hospital, and from a study of the various forms of treatment he has evolved the "Bradford method with which he has

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[1] The Treatment of War Wounds by W W Keen M D, LL D Emeritus Professor of Surgery, Jefferson Medical College, Philadelphia. W B Saunders Company 1917 [illegible] 75

THE TREATMENT OF VENEREAL DISEASES.

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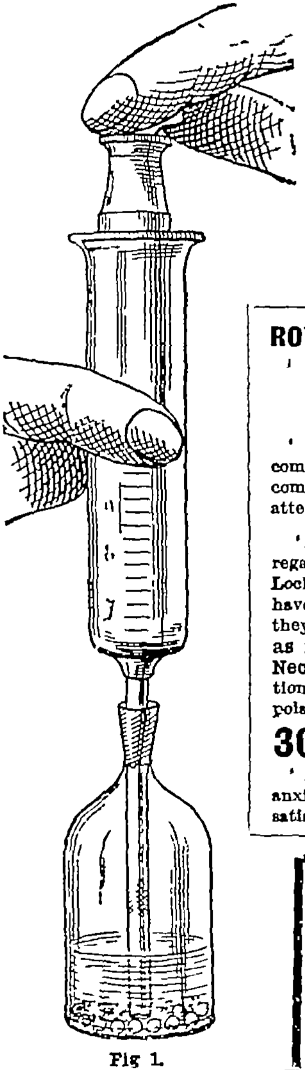

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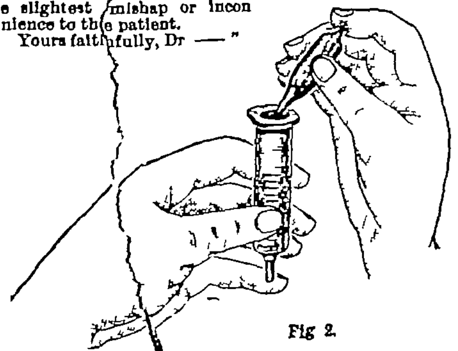

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FOR INTERNAL ADMINISTRATION.

Hectargyre Pills

Hectargyre Drops.

THE ANGLO-FRENCH DRUG CO, Ltd, Gamage Building, LONDON, E C 1.
(Late M BRESILLON & Co)
Telegrams "AMPSALVAS, LONDON"
Telephone HOLBORN 1311

attack but rather has made the circumstances more tolerable, and it is this growing bravery which has become a feature of our psychology, and which accounts for the fact that a short relief from strain is almost invariably followed by a complete recovery of balance.

◆

Training in Citizenship.

THE prophylaxis of responsibility has never been a success in this country, and the adolescent boy or girl exposed to the full brunt of independence without any previous experience often succumbs to attacks of wrongheadedness, with results which may in one social class lead only to distressful family relations and in another to collision with external authority. The recent outbreak of juvenile crime is an example of the latter which cannot be set aside as a matter solely for punitive action. The Bishop of BIRMINGHAM in a recent letter to the *Times* describes with accuracy and restraint the nature of the complaint and goes on to put his finger upon its cause. Reasonable obedience to authority and regard for the demands of the social necessities of the community are, he says, almost dead in the vast mass of the youth of the land, as a natural and inevitable consequence of the fact that the growing girl and boy receive little assistance in any direction towards a training in citizenship. This has been the prime failure in the national education of the present time, and the result is just as inevitable as the exposure to measles of a community which has had no training in protection against it. Dr. WAKEFIELD considers—and all thoughtful people will agree with him—that an effective training in citizenship is an essential part of elementary education. But it is no use now relying upon a future educational system which will come too late to be effective for the upgrowing generation, even if it accomplishes something useful later on. He therefore suggests a combination of existing organisations dealing with young people for the purpose of conference and combined action. The response already made to his letter shows that some at all events of these organisations are keenly alive to the need of action, which is indeed imperative for the satisfactory solution of the myriads of after war problems.

THE Harveian Oration of the Royal College of Physicians of London will be delivered at the College by Dr. Robert Saundby, at 4 o'clock, on Thursday, Oct. 18th.

LITERARY INTELLIGENCE.—Lord Rhondda will contribute an introduction to the new edition of Sir William Crookes's book on "The Wheat Problem," which Messrs. Longmans will shortly publish. An additional chapter on Future Wheat Supplies has been contributed to the book by Sir R. Henry Rew, K.C.B.

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND.—At a meeting held in London on July 31st last it was decided to hold a general meeting of the medical profession in October in order to nominate a representative general committee and to discuss the best methods of promoting this appeal. This meeting has now been arranged for Wednesday, Oct. 10th, at the Medical Society's, 11, Chandos-street, Cavendish-square, W., at 5 P.M. It is hoped that the meeting will be largely attended in order that the appeal may be well supported and made widely known to the medical profession and the public. Lieutenant-Colonel Sir Alfred Pearce Gould, K.C.V.O., will preside.

Annotations.

"Ne quid nimis."

INSINCERITY IN CASES OF WAR INJURY.

A RECENT number of the *Paris Médical* contains an essay on insincerity as a feature of certain cases among the wounded which, though its conclusions are admittedly tentative, forms an interesting attempt to clear the air and facilitate further investigation. The authors, M. Laignel-Lavastine and M. Paul Courbon, are in charge of the centre, under the military government of Paris, for the examination of soldiers who, in the absence of evidence of organic disease, are suspected of "ill will." They divide functional states into two groups. In the first the patient is unaware that he is the originator of the troubles of which he complains, and is therefore sincere in making himself out to be ill; here are placed those psychoses characterised by impairment of the critical faculties, notably hysteria. In the second group the abnormal functional manifestations are directly dependent on the conscious "mauvaise volonté" of the patient; to be consciously aware of being the cause of his own complaint is the mark of the simulator. In the latter case the physician, recognising the illegitimate nature of the symptoms complained of, may distinguish three categories: (1) somatic disturbances, comprising mutilation and "pathomimia," or the artificial concoction of a diseased condition; (2) functional disturbances or simulation properly so called; (3) functional disturbances grafted on a genuine organic affection, including exaggeration and perseveration. The diagnosis of malingering is really a psychological problem; in other words, the question is whether the patient has or has not the intention of deceiving. Now to detect an individual's intention is notoriously difficult; it is perhaps more prudent, therefore, merely to say, in a particular case, that there is no reason why the symptoms should not disappear. But this attitude is obviously unsatisfactory when dealing with such cases as M. Laignel-Lavastine and M. Courbon have under their care; their task is to search the reins and the hearts and to face the risk of making mistakes. If to ourselves our inner man is the sport of involuntary or unconscious deceits which render an exact determination of our motives all but impossible, how can we hope to settle analogous questions in others? The answer is that precisely this intimate deception does not impose or has less power of imposing on the outside observer. Experience shows there are constitutional peculiarities in different individuals which determine the variations in their intention to deceive. There is the pure simulator or malingerer without apparent excuse, who does not wish to risk his life or to undergo the fatigues of warfare. Among the numerous types who advance some excuse may be distinguished the emotional simulator, who thinks he could never bear the sights of the battle-field; the hypochondriac, who thinks his physique would not stand campaigning; the man who pretends he would be more useful in less exposed positions or declares he has already "done his bit," or excuses himself by instancing the good fortune of some comrade. Often, too, the patient begins to malinger at the instigation of his family or continues to do so to prove to the physician he has obtained excellent results It is essentially a combination of these two methods, the Rutherford Morison and the Carrel treatment, preference being given to the one or the other according to the lesion, and sometimes the two are employed in turn Success depends not only on the actual method itself, but also on the application, and this is why the inventor of a new method may obtain results superior to those of others If a surgeon is working on lines in which he does not believe, it is unlikely that he will meet with success, he does not carry out instructions with the care and thoroughness that he would use if he believed absolutely Little details vital to success will be omitted or imperfectly carried out, and the method will be dismissed as of little or no value At the first introduction of antiseptic surgery surgeons who did not believe in it condemned it as useless, "for," said they, "we have used carbolic acid in the wound and pus was formed as usual," forgetting or ignoring that the principle of antiseptic surgery is not merely the employment of carbolic acid There is no finality in surgery, and we certainly have not reached any finality in the treatment of wounds in war, but it is certain that in the past three years we have learned much of the treatment of these wounds, we have been able to save life and to prevent much pain and delayed healing

Air-Raid Psychology and Air-Raid Perils

In certain schools of biological thought, as we had occasion to point out when discussing the subject of air raid psychology a few weeks ago, a favourite theme is the adaptation of the organism to repeated sense stimuli of a given type, whereby appropriate reflex action by way of defence or otherwise is installed Now the aerial bombardment of crowded cities is a recent development of "civilised" warfare, our sense organs have not in any general manner become adapted to the stimuli, with the result that, among the population taken in mass, definite defensive behaviour has not been evolved as a normal course But although it would be too much to expect that in so short an experience of aerial bombardment the public conduct should have devised at once the wisest courses of action in circumstances which are not only very trying in themselves but very diverse in their dangers, yet it may be claimed that in London and its environs the inhabitants have already gone a long way towards behaving in bulk with bravery and prudence It is a truism that a crowd is impulsive and mobile, but their common impulse and consequent movement, when properly directed, spread rapidly, grow wiser and stronger as they spread, and tend to shape the behaviour of the unstable members with a force that is augmented by geometrical progression London behaved well at the beginning in face of the new perils, and the beginning is being justified by the sequel

London during last week endured five aerial raids of varying severity, and each of those raids had as furious an intent as any of the others During this week, as we write, London has been the objective during two nights of similar exhibitions of frightfulness, and there is not a doubt that the immense populations involved have learned with speed and uniformity lessons which have saved many lives, which will save more lives, and which—this is of infinite importance—have enabled them to analyse their dangers, estimate the severity of those dangers, and front them therefore with that spirit of comprehension which is the basis of fortitude The experiences of London happen to be our text, but they exemplify, of course, the experiences of all centres of aerial attack At the present moment London is to the enemy the symbol of our national might and its inflexible resolves, and is, therefore, the object of their most determined onslaughts, but lessons learnt from events in London are applicable throughout the zone of war The people of London, including those of the densely populated rings without London proper, now appreciate that their risks can be divided into two—namely, those from the bombs of the enemy and those from the defensive gun fire, and they know, further, that by as much as the hideous din and luridly magnificent atmospheric effects constitute the most terrifying stimuli to their senses, by so much is fear misplaced, because it is the work of our defensive machinery, as the enemy in vain tries to penetrate, which accounts for nearly all which they can hear or see The Home Office has drawn up a leaflet containing a summary of the advice which has been given so far to the public, with the additions and modifications which events appear to justify An intelligent reading of this leaflet proves how small are the risks to which the bulk of the population is submitted from the supreme danger of being bombed by the enemy, but how great are the chances of catastrophe from the avoidable risks accompanying our own defensive activity, while it is this activity which rings us round for long periods and on repeated occasions with the tumult of hell Almost all of what we hear and what we see—and the less we try to see anything the better—amount to sound and fury, and although they are far from signifying nothing, the simple precaution of taking cover leads to probable safety

The evidence of medical men who reside in the attacked centres or who have been present quickly on the scene of an accident, or who have been summoned to attend the victims of shock, all goes to show that the inhabitants of London have steadily improved in courage and calm as they have learnt the measure and the sources of the dangers to which they are subjected, and we are glad to state positively that among those whose natural anxiety has been greatest—and there is not a soul among us who does not feel anxious during an aerial attack for himself as well as for those nearest and dearest to him—the power of recuperation has manifested itself with great rapidity The recurrence of the dangers has tended not to exaggerate those dangers, as the enemy hoped fondly would happen if attack followed often upon attack but rather has made the circumstances more tolerable and it is this growing bravery which has become a feature of our psychology, and which accounts for the fact that a short relief from strain is almost invariably followed by a complete recovery of balance

Training in Citizenship

THE prophylaxis of responsibility has never been a success in this country and the adolescent boy or girl exposed to the full brunt of independence without any previous experience often succumbs to attacks of wrongheadedness, with results which may in one social class lead only to distressful family relations and in another to collision with external authority The recent outbreak of juvenile crime is an example of the latter which cannot be set aside as a matter solely for punitive action The Bishop of BIRMINGHAM in a recent letter to the *Times* describes with accuracy and restraint the nature of the complaint and goes on to put his finger upon its cause Reasonable obedience to authority and regard for the demands of the social necessities of the community are, he says, almost dead in the vast mass of the youth of the land, as a natural and inevitable consequence of the fact that the growing girl and boy receive little assistance in any direction towards a training in citizenship This has been the prime failure in the national education of the present time, and the result is just as inevitable as the exposure to measles of a community which has had no training in protection against it Dr WAKEFIELD considers —and all thoughtful people will agree with him—that an effective training in citizenship is an essential part of elementary education But it is no use now relying upon a future educational system which will come too late to be effective for the upgrowing generation, even if it accomplishes something useful later on He therefore suggests a combination of existing organisations dealing with young people for the purpose of conference and combined action The response already made to his letter shows that some at all events of these organisations are keenly alive to the need of action, which is indeed imperative for the satisfactory solution of the myriads of after war problems

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THE Harveian Oration of the Royal College of Physicians of London will be delivered at the College by Dr Robert Saundby at 4 o clock on Thursday Oct 18th

LITERARY INTELLIGENCE —Lord Rhondda will contribute an introduction to the new edition of Sir William Crookes's book on The Wheat Problem which Messrs Longmans will shortly publish An additional chapter on Future Wheat Supplies has been contributed to the book by Sir Henry Rew K C B

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND —At a meeting held in London on July 31st last it was decided to hold a general meeting of the medical profession in October in order to nominate a representative general committee and to discuss the best methods of promoting this appeal This meeting has now been arranged for Wednesday Oct 10th at the Medical Society's house 11 Chandos-street Cavendish-square W at 5 P M It is hoped that the meeting will be largely attended in order that the appeal may be well supported and made widely known to the medical profession and the public Hon Treasurer [illegible] Sir Alfred Pearce Gould K C V O [illegible]

Annotations.

"Ne quid nimis"

INSINCERITY IN CASES OF WAR INJURY

A RECENT number of the *Paris Médical* contains an essay on insincerity as a feature of certain cases among the wounded which, though its conclusions are admittedly tentative forms an interesting attempt to clear the air and facilitate further investigation The authors, M Laignel-Lavastine and M Paul Courbon, are in charge of the centre, under the military government of Paris, for the examination of soldiers who, in the absence of evidence of organic disease, are suspected of 'ill will" They divide functional states into two groups in the first the patient is unaware that he is the originator of the troubles of which he complains, and is therefore sincere in making himself out to be ill, here are placed those psychoses characterised by impairment of the critical faculties, notably hysteria In the second group the abnormal functional manifestations are directly dependent on the conscious "mauvaise volonte" of the patient, to be consciously aware of being the cause of his own complaint is the mark of the simulator In the latter case the physician, recognising the illegitimate nature of the symptoms complained of, may distinguish three categories (1) somatic disturbances, comprising mutilation and "pathomimia,' or the artificial concoction of a diseased condition, (2) functional disturbances or simulation properly so called, (3) functional disturbances grafted on a genuine organic affection, including exaggeration and perseveration The diagnosis of malingering is really a psychological problem, in other words, the question is whether the patient has or has not the intention of deceiving Now to detect an individual s intention is notoriously difficult, it is perhaps more prudent, therefore, merely to say, in a particular case, that there is no reason why the symptoms should not disappear But this attitude is obviously unsatisfactory when dealing with such cases as M Laignel Lavastine and M. Courbon have under their care, their task is to search the reins and the hearts and to face the risk of making mistakes If to ourselves our inner man is the sport of involuntary or unconscious deceits which render an exact determination of our motives all but impossible, how can we hope to settle analogous questions in others? The answer is that precisely this intimate deception does not impose or has less power of imposing on the outside observer Experience shows there are constitutional peculiarities in different individuals which determine the variations in their intention to deceive There is the pure simulator or malingerer without apparent excuse, who does not wish to risk his life or to undergo the fatigues of warfare Among the numerous types who advance some excuse may be distinguished the emotional simulator, who thinks he could never bear the sights of the battle field, the hypochondriac, who thinks his physique would not stand campaigning the man who pretends he would be more useful in less exposed positions or declares he has already done his bit,' or excuses himself by instancing the good fortune of some comrade Often too the patient begins to malinger at the instigation of his family or continues to do so to prove to the physician he has been wrongly accused of simulating It must be admitted that occasionally therapeutic mal adroitness suggests to the patient the idea of perpetuating his troubles, of the nature of which he was at first unaware Exaggeration is very frequently observed, perhaps the commonest is that where the exaggeration is scarcely conscious That symptoms may vary with the attention paid to them is not necessarily an indication of conscious deceit The authors discuss with some minuteness the forms that simulation actually takes once the idea has occupied the patient's mind They describe the active malingerer, who usually defeats his own purpose by challenging the observer's diagnostic power, the apathetic, who with oriental fatalism makes no reaction against the idea that he is ill, and who perseveres till the physician is exhausted, the sensitive, who eagerly falls in with the suggestions of the doctor and agrees readily enough that there is nothing the matter, yet persistently fails to throw off the influence of some trifling emotional factor With this sensitiveness is associated a sort of mental dilettantism, which is especially noticeable in those who have already been at the front, arriving home again it may be for some genuine though temporary condition The authors give a picturesque, yet none the less accurate, account of the devices to which the simulator has resort, and of the assumed attitudes of injured innocence, or of suspicious politeness, or of spurious anxiety to help in the unravelling of their case

A COLOUR WARD

Mr H Kemp Prosser holds the opinion that the colour of the surroundings has an enormous effect on the recovery of the sick, especially those who are depressed for one reason or another or are suffering from shell shock. An opportunity has been afforded him for carrying out his ideas by Miss McCaul, who has placed at his disposal a small ward in the McCaul Hospital in Welbeck street This ward he has had decorated according to his theories and the result is certainly very pleasing He claims that it is of the first importance to remove from the patient the idea of being shut in, an idea which is truly often a cause of great worry to some sufferers Therefore he paints the ceiling a bluish colour, so as to resemble so far as possible the blue of the sky, and the tint he employs he calls 'firmament blue" This blue is also used for a wide frieze The walls are painted a greenish yellow to represent the colour of foliage in spring, and the tint is called "Sunlight Primrose" A narrow slip of darker green separates the blue of the frieze from the walls The floor is painted with a yellowish green, containing certainly more green than the walls The window curtains are double, the inner curtains are mauve, and the outer curtains are pale yellow The furniture is tinted yellow, and the bedspreads are a warmer yellow The object of having the furniture of the same colour as the walls is that it may not be obtrusive, but, as it were, fade into the walls The fireplace is painted the colour of silver, and even the tea sets are chosen of a pale yellowish tint There is no pattern anywhere in the room, except that the upper edge of the bedspreads has a simple design, and over the fireplace a small painting hangs, representing a scene near Maidstone in early spring Mr Prosser maintains that it is essential that no browns or reds should be used, for these colours are saddening There is no doubt that this ward has a very cheerful effect, and we can well believe that the eyes of a man greatly depressed from shell shock or from some other cause would find in such a room as this no little relief from his depression, and this merely from the general aspect of the room Mr Prosser has devoted much trouble to carrying out his ideas, and though we do not endorse them fully, we feel that there is something to be said in their favour, anyhow we agree that the colouring of wards for the sick and wounded has been too little considered in the design of many hospitals The work of Mr Prosser will not have been in vain if it leads to more care being devoted to this aspect of hospital furnishing

PRIMARY TUBERCULOSIS OF THE TONSIL

IN an investigation made by Dr A Philp Mitchell for the Medical Research Committee, and published in the *Journal of Pathology and Bacteriology* (vol xxi), the author concludes that tuberculosis of the upper deep cervical glands develops from a primary focus in the faucial tonsils much more often than commonly supposed Primary tuberculosis of the tonsil cannot be recognised by the naked eye, but requires the aid of the microscope or of inoculation experiments Lesions tend to appear in certain sites, commonly just subjacent to the surface epithelium near the mouth of the lacunæ, less often in relation to the deeper portions of crypts, or deep in the tonsil close to the capsule 100 cases of cervical adenitis in children and 6 in adults were examined, and in 41 of them tuberculous lesions were demonstrated in the tonsil. With regard to the type of infection, the results indicate that in Scotland, at any rate, tonsillar tuberculosis is bovine in origin In a small percentage of children Dr Mitchell found both bovine and human types in the tonsillar crypts without demonstrable lesions either in the tonsils or elsewhere He concludes that, on the curative side, tonsillectomy is essential in all cases of tuberculous cervical adenitis in children, and, on the preventive side, that the only immediate safeguard is the sterilisation of all cows' milk supplied to infants and children The article contains a careful survey of previous work on the same subject, with an adequate bibliography The author has succeeded in throwing fresh light on a very important problem.

THE SURGERY OF THE NOSE FROM AN ÆSTHETIC POINT OF VIEW

THERE are few things of less real importance in itself than an ill shaped nose, yet though such a nose serves olfactory purposes, if it be of a very unusual shape it may cause its possessor real anguish All owners of an eccentric proboscis have not the qualities of Cyrano When the sufferer seeks the aid of his own medical adviser he is usually told not to worry about a matter which is not of the least importance, and if the patient has the right temperament sounder advice cannot be given But in other cases, where there is something definite that might be done, and where the patient's mental distress is very real, we think his complaint should be met in a different spirit In a recent issue of THE LANCET we printed a paper by Dr Julien Bourguet, of Toulouse, in which he described briefly the methods which he employs to remedy certain nasal deformities, and he gives illustrations of some of the patients on whom he has operated, showing the original conditions and those left after operation He thus proves how much may indeed be done by care and skill in many cases Most of the results have been very good, for one important point in the method employed by Dr Bourguet is that all the operative procedure is done from within the nose, the incisions being made through the mucous membrane, so that there is no external incision and no external scar It is hardly necessary to say that in this country also there are surgeons who practise these cosmetic operations with success and the numerous cases of nasal deformity which may be found among the wounded in the war offer a fine field for much good work, which should not be invariably closed by the suggestion to the patient that he had better put up with a trouble which does not affect his general health. Of course, a more difficult problem faces the surgeon who has to deal with cases where the nose is completely destroyed than where he has only to remedy an ugly shape Here there can be no question of a slight operation, any operation that is done must be extensive and thorough, if the result is to be anything more than a travesty of a nose The result cannot be called satisfactory unless it satisfies the patient, for the operation is only undertaken for the purpose of giving the sufferer relief from the annoyance of being without a nose Since the days of Tagliacozzi the operation of rhinoplasty has had many exponents, and in favourable cases the results have been excellent, satisfying even the most exigeant of patients, while the operation devised and first practised in India may give results leaving little to be desired There are, however, many cases of destroyed nose where the conditions of the tissue in the vicinity render thorough operation impossible Some time ago[1] we published an illustrated account of nasal prosthetic feats Lieutenant Derwent Wood, A.R.A., there showed, with the aid of some striking illustrations, the marvellous improvement which may be effected in the appearance of patients by the aid of masks of greater or less extent, according to the individual cases Mr Wood s knowledge as a sculptor enables him to imitate as perfectly as possible the former condition of the face so that the patient may look as he looked before The war has provided no small number of cases for the exercise of skill in these cases, and in many cases a marvellous alteration for the better can be accomplished

IRITIS AND OPTIC NEURITIS FROM TONSILLITIS

THAT tonsillitis may be the starting point of many forms of systemic infection and of inflammation in other organs such as endocarditis, pneumonia meningitis and nephritis, has been recognised in recent years Though the relation between iritis and other forms of ocular inflammation and septic foci in other parts has been emphasised in the same period the importance of the tonsil as a source of infection is not sufficiently recognised In the *Boston Medical and Surgical Journal* Dr I Sobotky has reported a case of iritis and optic neuritis following tonsillitis in which tonsillectomy was curative thus confirming the connexion A woman aged 21 years convalescing from acute follicular tonsillitis was seen on Oct 19th 1915 She showed enlarged and tender cervical glands and extreme congestion around the right cornea She gave a history of attacks of tonsillitis, usually at yearly intervals and followed after a week by inflammation of the eyes In the present attack the right eye was very painful and sensitive to light She was sent to the Massachusetts Eye and Ear Infirmary, where the following record was made "Oct 20th Iritis of right eye Optic neuritis of both eyes Pupil well dilated and regular Upper lid slightly swollen No evidence of syphilis Oct 25th Less pain in right eye Left eye, slight ciliary congestion Oct 29th Nasal examination shows rhinitis and diseased tonsils X ray report Teeth and accessory sinuses negative Dr Quackenboos agreed with Dr Sobotky that the tonsils should be removed On Nov 4th this was done They showed chronic inflammation and the crypts were filled with caseous material The Wassermann reaction was negative On Dec 14th both optic discs were swollen to at least two diopters with some dilatation of the vessels On Jan 11th, 1916, the swelling had diminished On March 1st, but for slight blurring, the discs were normal. On Jan 25th, 1917, the patient resumed work as a stenographer and has remained quite well since that date

NOTIFIED VENEREAL DISEASE IN CHRISTIANIA

IN his annual report for 1916 on venereal disease, reprinted from *Tidsskrift for den Norske Laegeforening*, P Schou, medical officer of health of Christiania, gives an account of the system of notification adopted in that city Though the report contains much interesting statistical information, it omits many details which, to readers unacquainted with legislation on venereal disease in Norway, would have given a more comprehensive survey of the subject 3240 new casse of venereal disease were notified, of which 1930 were gonorrhœa, 405 soft sore 860 acquired syphilis, and 45 congenital syphilis Of cases of extragenital infection there were 12 of primary syphilis of the lip, 8 of the tonsils, 1 of the abdomen, and 1 of the second finger of the right hand In 70 cases the notifications contained information which led to investigation of the source of infection, and of these the search resulted in disclosure of the sources of infection in 43 cases According to information received the medical officer of health and the assistant woman doctor examined 21 men and 25 women, of whom 1 man and 1 woman were "found" by the police Five men and 4 women, instead of attending on the medical officer of health, let themselves be examined by other doctors and produced certificates, of these patients 3 men and 4 women proved to be infected None refused to be examined Of the notified patients, 140 men and 1 woman declared they had been infected outside the town, and of these a large proportion were sailors whose infection had occurred in foreign ports The number of those infected outside the town was evidently greater but some doctors did not specify the place of infection on notification With the best of intentions the notifying doctors must probably often have found it impossible to provide this information As regards marital infection, 22 women and 14 men notified their consorts as the source of infection On account of intimate association with patients suffering from venereal disease (relations adopted children, &c) 6 men and 7 women were examined, with the result that 1 woman was found suffering from syphilis and 1 from gonorrhœa The report does not, however, state how the disease was contracted in these two cases Further, 460 men and 138 women were examined by the medical officer of health and the assistant woman doctor after having voluntarily reported themselves to the medical officer of health in order to receive treatment or to be sent to hospital. Of the total number of patients examined, 28 men and 60 women were admitted to hospital The Board of Health defrayed the expenses of special treatment for 209 men, of whom 69 suffered from syphilis The woman doctor treated 49 women and 2 children at the Board of Health Of these, 32 women and the 2 children suffered from syphilis Certain cases of venereal disease which were given ambulatory treatment by the Board of Health were also given free medicine, this raised the cost during the year to kroner 3862, as compared with kroner 2782 in 1915 One notification dealt with a case of infection with syphilis after treatment with salvarsan The medical officer of health approached the police 22 times with a view to securing their help for revealing sources of infection One woman was admitted to hospital by the help of the police The police notified 19 women and secured one conviction of offence against the law that any person who knows that he or she suffers from venereal disease and yet indulges in sexual intercourse or exposes another person to infection is liable to punishment up to three years' imprisonment Dr Schou does not state what penalty followed this isolated conviction, nor does he say why convictions were not secured in the other cases notified by the police That they secured only one conviction out of 19 cases is, however, in itself an eloquent testimony to the difficulties encountered in legislative attempts to penalise the spread of venereal disease

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[1] [illegible]

THE ORGANISM OF TYPHUS

IN the third number of *The New East*, a monthly review of "thought and achievement in the Eastern and Western worlds," published in English and Japanese at Tokyo, appears a short summary by Professor Futaki and his colleagues of the present position of the search for the causal agent of typhus Typhus was introduced into Japan from Russia in 1914, and the epidemic since occurring has afforded ample opportunity for etiological study So far various competing agents have held the field bacilli described by Ricketts and Wilder, intra leucocytic bodies by Nicolle, both in 1910, a diplobacillus noted by Rabinowitsch and a diplococcus by Furth in 1912, other intra corpuscular bodies seen by Prowazek, and recently cocci again by Plotz and his co workers After carefully examining these rival claims Futaki reported to the Japanese Congress of Internal Medicine in April, 1916, his inability to confirm any of them from his own observation, adding his conclusion that the virus was either a free, non visible corpuscle or a minute spirochæte After finishing an investigation into rat bite fever with the isolation of a spirochæte the Japanese observers have now done the same for typhus In April of this year a spirochæte was found in the lumen of a kidney tubule in a patient dead of typhus, and similar organisms in the next seven cases examined except one at a very late stage of the disease Later spirochætes were found in the urine of patients in an early stage, and injections of blood from one such made into a *rhesus* monkey gave rise after nine days' incubation to an illness in which similar spirochætes were found in kidneys and urine The organism is described as resembling in form the *S pallida*, 6 8 μ in length, with 5 7 windings, and a short cilium at each extremity It stains with silver and Giemsa. Dr Futaki and his colleagues at the Imperial Institute for Infectious Diseases, Tokyo, believe the organism they describe to be the causal agent of typhus, and propose for it the name of *S exanthematotyphi* The name is correct but cumbrous in Western characters, and if the Japanese organism, as seems probable, retains its place, we might prefer to call it *S japonica*

ANNUAL REPORT OF THE CHIEF VETERINARY OFFICER FOR THE YEAR 1916

THE report for 1916 of the Chief Veterinary Officer of the Board of Agriculture and Fisheries (published by H M Stationery Office) shows that the problem of combating the diseases of animals at home must not be neglected, even though the thoughts of everybody are concentrated on war and war areas England, from its insular position, is especially fortunate in regard to its ability to prevent the entry of suspect animals from abroad, as it is enabled to enforce quarantine precautions, and for this reason there are some maladies which continental veterinary authorities are called in to deal with which do not exist with us However, some of these contagious diseases still gain an entrance, and this in a manner at present not satisfactorily explained, but the necessity of careful attention to home matters as well as those outside the island of Great Britain itself is thus demonstrated Foot and mouth disease of cattle is an instance of this, an outbreak of which occurred on Feb 10th at a place as far away from a port of cattle debarkation as Shepton Mallet in Somerset By the skill of the veterinary inspector it was diagnosed and reported, and the Board of Agriculture confirmed and dealt satisfactorily with it Careful inquiries, however, failed to detect the origin of the outbreak In the report the other scheduled diseases are dealt with, particularly swine fever, swine erysipelas, tuberculosis, glanders, anthrax, and sheep scab 4331 outbreaks of swine fever were confirmed, an increase of 337 on the previous year Serum treatment was accepted by the owners in 83 per cent of suitable cases, the results showing a benefit of 17 per cent in favour of pigs on premises where such treatment was applied Serum treatment being preventive and not curative successful results depend largely on getting early in touch with outbreaks Greater finality is hoped from treatment with sero vaccine, which is still on its trial, since the mortality from the treatment itself has been considerable About 9000 specimens were examined and reported upon in the Veterinary Laboratory—altogether a busy year s work when many of the staff are away on active service

AN exhibition of war specimens, collected by members of the Royal Army Medical Corps and prepared by members of the museum staff of the Royal College of Surgeons, will be opened in the museum of the College, Lincoln's Inn fields, W C, on Thursday, Oct 11th, at 3 P M, by Sir Alfred Keogh, G C B, Director General of the Army Medical Service At the same time the Council of the College will present its honorary Fellowship to Sir Alfred Keogh

THE CONTROL OF VENEREAL DISEASES

National Council for Combating Venereal Diseases

THE question of the artificial prophylaxis of venereal disease has been discussed at a recent conference of the National Council and at two meetings of its Executive Committee A special meeting of the Council is to be held on Monday, Oct 15th at 8 30 P M., at 1, Wimpole-street W., to consider the following resolution submitted by the Executive Committee —

> In view of the public attention now directed to the whole subject of prophylaxis the Executive Committee, after careful consideration, is not prepared to depart from its original position, in which, in accordance with the spirit of the Royal Commission's Report it refrained from recommending the adoption of prophylaxis—i.e. the provision of outfits to men before sexual indulgence The committee strongly urge the importance of the making of arrangements for the early treatment of venereal disease even before the outset of symptoms.

An informal discussion on the progress of the movement between members of the executive and other committees and the members of the National Council will take place at a reception to be held at the Grafton Galleries at 8 30 P M on Tuesday Oct. 16th, when delegates from the various branches will be present.

Measures Taken in New South Wales

Speaking at the recent annual general meeting of the Royal Prince Alfred Hospital at Sydney Sir Thomas A. Stuart, chairman of the board of directors spoke of the work of the evening venereal clinics instituted in 1915 at the request of the State Government Before the establishment of these clinics a large number of cases were not treated at all or were treated by quacks The Royal Prince Alfred Hospital was the only institution responding to the Government's appeal with the result that patients came in crowds and overwhelmed the resources of the hospital. In 1915 more than 2000 cases were on the books during the year, while in 1916 the number was 2643 On one occasion it was necessary to call in the police to assist in maintaining order and the board was reluctantly compelled to reduce the numbers admitted to the clinics The hospital has 30 beds for women and children suffering from venereal diseases and has served as a model for the establishment of similar clinics in three other States and in New Zealand

Sir Thomas Stuart referred to a report made to him by the medical superintendent of the hospital, who had just returned from Egypt where he had been instrumental in carrying through certain preventive measures A prophylactic or preventive tent was established at the entrance of each camp for men returning to their quarters after having exposed themselves to infection. Of a certain series of 2000 cases only three developed disease while in another series in the first month after the system had been established of 432 men who were attended to in the tent not one became infected, while of 35 men who developed the disease not one had visited the tent Acting on this report the Commonwealth Defence Department has established similar arrangements at each military camp in the several States

Enlightenment Campaign in Victoria

The Public Health Department of the State of Victoria has issued a 16 page pamphlet dealing in popular manner with venereal diseases (1) the causes symptoms and results of venereal diseases, (2) the provisions of the Venereal Diseases Act (3) directions to parents and guardians regarding children suffering from venereal disease, and (4) the provisions relating to advertisements

The provisions of the Venereal Diseases Act 1916 may be briefly summarised as follows 1 Any person suffering from a venereal disease shall forthwith, on becoming aware of his condition consult a medical practitioner either privately or at a hospital or clinic and shall also supply his correct name and address Failure to do so renders him reliable to a penalty of £20 It is illegal for any person other than a medical practitioner to treat venereal disease Chemists are not allowed by law to treat any person suffering from venereal disease 2 Every patient who is under medical treatment shall continue under treatment until he has received a certificate of cure 3 A patient may change his medical adviser but if he does so must inform his new adviser of the name and address of his last adviser 4 A person suffering from venereal disease and not being treated by a medical practitioner may be apprehended, after due warning and detained until cured 5 No one shall knowingly infect any other person with a venereal disease, or knowingly do or permit or suffer any act likely to lead to the infection of any other person with such a disease Penalty, £100 or 12 months' imprisonment or both. 6 No one suffering from venereal disease shall prepare or handle food intended for consumption. 7 Anyone suffering from venereal disease shall take all reasonable precautions to prevent spread of infection and shall carry out the directions and instructions of the medical attendant

The provisions relating to advertisement prohibit under penalty of fine or imprisonment anything in the nature of a public advertisement relating to venereal diseases, nervous debility, or to the treatment of complaints peculiar to women. The offender is liable to summary arrest Any person printing or distributing such advertisement is also liable to severe penalty And any newspaper or any printed or written matter is prohibited from entering Victoria if it contains reference in the nature of an advertisement to the conditions mentioned. A protective clause runs as follows "No offence, however will be committed by any person who prints publishes distributes delivers or posts any *boná-fide* medical or pharmaceutical book, pamphlet, magazine, or periodical or any work of recognised literary merit relating to the conditions referred to"

Bombay League for Combating Venereal Diseases

The Bombay Sanitary Association, which was founded in 1903 with a view of coöperating with the Health Department in educating the public on matters of hygiene and sanitation, held a conference on March 6th and 20th 1917 to discuss the incidence and control of venereal diseases in Bombay, at which the following resolutions were passed —

> 1. That in view of the great prevalence of venereal diseases in Bombay and of their grave consequences, this conference of medical men assembled is of opinion that the time has come when the public and the State should be roused to the gravity of the situation, and induced to take measures to prevent them.
>
> 2. That a league for combating venereal diseases and consisting of medical and lay men, be formed to educate public opinion and to devise and assist in carrying out all such measures as are calculated to prevent the spread of these diseases.

A provisional committee was appointed to take the necessary steps for the formation of the League, with the Hon Mr G S Curtis C.S.I., I.C.S., as president, Surgeon-General R. W. S Lyons M.D., I.M.S and Sir Fazulbhoy Currimbhoy as vice presidents, and Dr John A. Turner C.I.E., and Dr Lemuel L Joshi as joint honorary secretaries At a later meeting of this committee the aims and objects of the League were defined as follows (1) To provide accurate and enlightened information as to the prevalence of these diseases and as to the necessity for early treatment, (2) to promote the provision of greater facilities for their treatment, (3) to increase the opportunities of medical students and practitioners for the study of these diseases, (4) to encourage and assist the dissemination of a sound knowledge of the physiological laws of life in order to raise the standard both of health and conduct, (5) to coöperate with existing associations to seek their approval and support and to give advice when desired, (6) to arrange in connexion with such organisations, for courses of lectures and to supervise the preparation of suitable literature, (7) to promote such legislative social, and administrative reforms as are relevant to the foregoing aims and objects

Dr J A Turner read a paper at the conference summarising the work being done in England and suggesting measures of control in Bombay The scheme he outlined involved an initial outlay on dispensary and clinic of R.5000 with an annual cost of R.20 000 for maintenance. Dr A Powell described the course of syphilis among the Indian community summarising the distinctive characters as follows Syphilis does not by any means run exactly the same course in Indians as it does in Europeans Hence European practitioners fresh from European schools look out for—and miss—the signs common in Europe They find but do not correctly interpret those common in the indigenous people of this country 1. Sore throats are much less common in India. 2. Rashes are less common. In a country where prickly heat and ringworm abound rashes are easily overlooked especially by the patient. 3

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[1] The address of the National Council [illegible] is [illegible] Avenue Chambers, [illegible] London, W.C. Tel.: Museum [illegible]

Tabes and G P I are infinitely less common in India 4 Obscure "rheumatic" pains in the joints, bones, and muscles are infinitely more common, more severe, and more persistent in Indians, in fact, they are often almost the only secondary and tertiary symptoms Genuine "acute rheumatism," "rheumatic fever" with its cardiac complications, is very rare among Indians 5 Disease of the arteries is much more common in India It is especially common in the ascending arch of the aorta and in the coronary arteries 6 Disease of the aortic valves is more common than disease of the mitral valves in India

REPORT FOR 1916 OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON[1]

Dr W H Hamer's fifth annual report in each of these capacities has just been issued Not farther back than last November his report for the preceding year was noticed in these columns[2] The appearance of the present volume after this brief interval indicates commendable promptitude Readers of the last two reports will miss the instructive series of diagrams which illustrate the volume for 1914 That their actual publication has been discontinued since that year is due to economic considerations But from the present context it is evident that their compilation is still in progress, and we may therefore hope that on the return of peace conditions this impressive method of graphic representation will be resumed in the published reports

PART I—PUBLIC HEALTH

The health of London in 1916 compares favourably with that of the preceding year The medical officer warns us, however, that the estimates of population available are still less trustworthy than were those of 1915, a fact that must be remembered in comparing the statistics of successive years When the National Register was compiled two years ago the marked local changes caused by war were only then beginning Consequently that register, which had never been quite reliable, could not be regarded as even approximately forecasting the subsequent movements of population The weather conditions of last year were phenomenal, and doubtless accounted in some measure for the substantial saving of life among infants, as well as for the unusual freedom at other ages from the ravages of infectious diseases In the year 1916 the flow of water under London Bridge was greater than in any previous year on record The floods of the early part of 1915 had been the highest since 1894, and there followed in the year under review a flow of water in the Thames of 875 thousand million gallons Apart from abnormal weather conditions, the study of sickness and death rates is complicated by disturbances incidental to war

Vital Statistics

The marriages in London during 1916 were fewer by about one third than those of the previous year, the decrease being greatest in the second half of the year The abnormally high number of marriages during the progress of hostilities probably corresponds fairly with the movements of enlistment Difficulties arise in calculating a marriage rate for comparison with pre-war figures, owing to the circumstance that the data include men on active service, while the published estimate of population relates to civilians only The Registrar General calculates a rate of 19 per 1000 for 1916 In the previous year it probably amounted to about 26 For analogous reasons the computation of a reliable birth rate is beset with difficulty The birth rate of the year under notice is officially estimated at 21 5 per 1000, against 22 5 in 1915, these rates may be generally compared with 25 the average in the quinquennium before the war—viz per 1000

Effect of war conditions on mortality—The Registrar General calculates the death rate of 1916 at 14 7 per 1000 of the civil population The rate of 1914 had been 14 6 calculated on the total population in the middle of the year Thus, with fewer deaths in 1916 the mortality is stated to have been higher This, however is an anomaly depending solely on the use of a civil population, without correction for changes among the living resulting from the withdrawal of males of military age—a period of relatively low mortality In the absence of hostilities the death rate of last year would have been below that of 1914, and probably would have barely exceeded 13 6 the low rate of 1912. At most ages the mortality in 1916 shows a decided improvement upon that of 1914 The decrease in the deaths under one year is partly due to the still falling birth rate, but not more than 10 per cent thereof can be thus accounted for The rate of infant mortality last year was 89 per 1000 births, and was 2 per 1000 above the lowest rate hitherto experienced in London The favourable condition of moderate summer temperature has doubtless contributed to this result, but it is probable that the recent restrictions on the sale of intoxicants has had a large share in reducing the deaths from suffocation, and perhaps also from prematurity It is worthy of mention that the decline in mortality has not taken place among infants *pari passu* with the decline at the higher ages, on the contrary, it has only become conspicuous during the current century, and particularly within the last seven years

Infectious diseases—The behaviour of infectious sickness last year was essentially similar to that in 1915 London suffered no disaster from the spread of typhus fever, and in spite of the importation of a few cases of small pox that disease never obtained a foothold. The civilian notified cases of scarlet fever numbered 8746, or about half the total reported in the preceding year, and about one-third the total in 1914 There were fewer attacks in 1916 than in any year since 1891, when notification first became compulsory The cases of diphtheria notified among civilians numbered 8743, differing little from the totals in each of the two preceding years Enteric or typhoid fever still continues to decline The notified attacks in 1914 had numbered 789, and in the following year 607, whilst there were only 461 in the year under review Among many possible sources of infection fish or shell fish were inculpated in 85 instances The year 1916 was the fifth in succession in which there was marked smoothing out of the autumnal rise in London The experience of last year confirms that of 1915 respecting the complete failure of evidence of increased spread of infection by human agency For, after making due allowance for the absence abroad of susceptible persons, the prevalence of typhoid in London in the last two years has been actually lower than ever before known despite the addition to the community of an appreciable number of typhoid convalescents from abroad On the other hand, recent phenomena tally well with the theory of food causation It is noteworthy that, as the late Dr H T Bulstrode asserted in his reports of 1896 and 1911 a steady improvement has been brought about in the last 20 years by the elimination of dangerous shell fish As regards further reduction of typhoid fever, there is reason to believe that more benefit is likely to result from pursuing the older epidemiological methods than from giving effect to the new principles advocated by Koch and his followers In particular, further care for the purity of shell fish layings and entire prohibition of the sale of ungutted flat fish are to be looked upon as the main lines upon which further advance can be made

Phthisis—The civilian deaths from phthisis in the year 1916 numbered 6491, as compared with 6875 in 1915 and 6476 in 1914 At military ages there was a decrease last year on the deaths registered in 1914 The calculation of a mortality rate for the civil population from the above figures would give a result in no respect comparable with pre war rates, for not only has the war left on the civil population practically all the pronounced phthisis, but a portion of the fatal cases among persons accepted for service, and among those subsequently discharged for tuberculous disease, are recorded as civilian deaths

Cerebro-spinal fever—In the course of last year 425 cases of this disease were notified among the civil residents of London, or fewer by 202 than in 1915 These figures do not include posterior basal meningitis The Registrar General tells us that in London cases of the last-named disease are notifiable under the head of cerebro-spinal fever, whilst elsewhere there is no uniformity of classification In view of this and other difficulties computation of fatality rates has not been attempted it being evident that records of death from cerebro-spinal fever for London bears no consistent relation either to the notified cases of that disease or to the actual number of deaths from this cause.

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[1] King and Son, Westminster pp 42 Price 1s

[2] THE LANCET Nov 11th 1916 p 837 and Nov 25th 1916, p 913

Poliomyelitis—There was an increase last year in the attacks by this disease reported throughout the country generally In London 197 cases of poliomyelitis were notified the highest number previously reported having been 145 in the year 1913

PART II—EDUCATION

A large share of the energy of the County Council s medical staff continues to be devoted to matters connected with education Of the administrative difficulties encountered in the preceding year as the result of war conditions no abatement was experienced in 1916 Thanks to the special efforts made by the older men and by the women already employed as school doctors, the work of medical inspection has been prosecuted with considerable success Moreover the difficulty of securing the services of a sufficiency of qualified persons for the hospital treatment of school children has been satisfactorily met The further difficulty of retaining an adequate supply of nurses has been overcome by the Council, who have adopted financial measures against the further depletion of the nursing staff whose full efficiency is essential in this department of the public service The work of "following up has been rendered particularly onerous by reason of the serious defection of volunteers To meet this emergency the care committees of several adjacent schools have coöperated with the view of economising the work of home visitation, and thus carrying out the duty of following up in urgent cases albeit with a reduced number of visitors

Medical inspection and treatment—Of the children primarily examined by the doctors last year in elementary schools 88 415 or nearly one third, were found to require treatment for defects Reinspections were made of the children who at the first examination had been found ailing with the result that 41 7 per cent. had been brought under treatment within six months, as compared with 49 6 per cent in 1914 Between the authorities of maternity centres and the school medical service satisfactory cöoperation has been established. In two instances the premises of the school treatment centres are also used by the maternity centre for the treatment of mothers and of childern under school age Similar cöoperative schemes are in prospect at four other centres The open-air schools at Birley House and Shooter's Hill were kept open throughout the year Kensall House school for tuberculous children has also been continued and some of the playground classes have been held in the public parks Altogether 5422 children were examined during the year with a view of admission to special schools and of these rather more than half were certified as suitable for admission The remainder were either returned to elementary schools or were declared unsuitable for any of the Council s institutions.

Personal hygiene—There are now 24 cleansing stations in London at 20 of which scabies is admitted for treatment more than 3000 children suffering from scabies were given not fewer than 17 000 baths in the course of the year Examination was made of 988 000 children, 25 000 of whom were found to be verminous Of these, 13 000 were were cleansed by the authorities and 11 000 by the parents Verminous children attending schools in outlying districts are now brought under the scheme and are conveyed to the cleansing stations in ambulances Moreover in certain instances borough councils are now giving special facilities for hot baths to be obtained by school children and members of their families

Malnutrition and emaciation—At the present time children suffering from that degree of malnutrition which is known as wasting are rare in our schools Conditions leading to emaciation are now detected at an early stage the sufferers being promptly referred to appropriate agencies for relief In the course of last year only 0 4 per cent of the children inspected were placed in this class against 0 51 in 1915 From figures relating to the last four years it appears that the general state of the children has been better during the war than in the period immediately preceding The yearly improvement of previous years in clothing and footgear as well as in general cleanliness has been fully maintained during 1916 This fact is presumably attributable in some measure to better economic conditions but it is doubtless largely due to the maintenance of medical and cleansing work carried on for some years past in connexion with the schools The continued improvement of the children which is revealed at the medical inspections testifies to the success of the arduous work of the school nurses "These splendid results, writes Dr Hamer, "which show that none of the horrors of war have been allowed to affect the general condition of the children or to interfere with the growth of that solicitous care for their welfare which has distinguished recent years are a matter for profound joy and satisfaction. They may well encourage us to face the future with complete confidence, for a community that can thus protect its children while putting forth the most prodigious martial efforts the world has ever seen, must be sound to the core" The dominant influence of social condition is manifest in the returns of the various parts of the metropolis A map showing the nutritional state of the children would correspond generally to one showing their social condition That this is so is abundantly evident from the report In the year 1913 a special study was made of the health of children of school age In a report respecting nearly 1000 of these children the close connexion of tuberculous disease with malnutrition was emphasised tuberculosis being definitely recognised in 19 per cent. of the cases examined, and its presence being suspected in a large additional proportion

Infectious diseases—The year under review was remarkable for exceptional freedom from infectious disease among school children In the case of scarlet fever the returns are particularly satisfactory In certain weeks of August and December the scarlet fever notifications throughout the metropolis were fewer than 100, being only about one-third the average in the corresponding weeks of the previous four years As causes producing this result the effect of altered nomenclature of climatic influence, and of flea prevalence are here reviewed, and the important question of the relationship of scarlet fever is considered. As regards flea prevalence, we note that examination of the flea and scarlet fever curves in the last eight years reveals a striking correspondence in their annual variations Among measures for limiting the spread of scarlet fever the importance of hospital isolation is taken for granted and the fact is referred to that the low level reached by that disease in 1916 has fortunately liberated for other uses many additional beds in the hospitals of the Metropolitan Asylums Board In respect of epidemic throat illness the record of the year under notice was unique, inasmuch as the notifications of diphtheria actually exceeded those of scarlet fever for the whole year whilst from Septembar onwards the excess was marked The strange comment was made in some quarters that the position was a serious one, inasmuch as diphtheria was more widely prevalent in London than scarlet fever, the real explanation being, of course, that the figures for scarlet fever were so exceptionally low as to render those for diphtheria unsatisfactory by contrast As long ago as the eighteenth century much confusion prevailed with reference to epidemic throat disease. It was not until 1831 that the term 'diphtheria was employed, up to 1855 the two diseases in question were classed together by the Registrar General, and in German statistical returns the heading Scharlach diphtherie" has continued in use till now The discovery of the diphtheria bacillus by Klebs and Loeffler in 1883 and 1884 led to the adoption of bacteriological methods for confirmation of the diagnosis of diphtheria and probably as a result there has been an increasing use of that term during the last 30 years The relationship between dry years and one or both of these conditions has been exhaustively analysed by Dr J B Longstaff and Sir Arthur Newsholme Dr Longstaff found the correspondence close in the sixties' and early seventies but less marked in later years Whilst Sir Arthur Newsholme dealing with diphtheria alone concludes that the essential factor in the production of epidemic and still more of pandemic diphtheria is the occurrence of a succession of years of deficient rainfall, associated as they must be with abnormally dry conditions of the soil and subsoil

DONATIONS AND BEQUESTS—The committee who are distributing the residuary estate of the late Mr Leopold Salomons have allocated a further £50 000 to hospitals.

PARIS

(FROM OUR OWN CORRESPONDENT)

The Importation of Malaria into France

I HAVE several times mentioned the existing fear that subjects of malaria, who are returning to France in great numbers from the Salonika Forces, should prove sources whence malarial disease may develop in their native country Against this apprehension it has always been urged that the intervention of particular kinds of anopheles is required, and that the culices and anopheles met with in France are inoffensive For prudence sake however, it has been recommended that hospitals reserved for the subjects of malaria should be placed in localities where there is not much stagnant water or many breeding places for gnats Definite proof now comes that fears on the subject were not exaggerated and that the hæmatozoa of oriental malaria can be transmitted by our indigenous anopheles, which seem to be capable of this new and regrettable adaptation M Victor Raymond and M Grysez proved the possible occurrence last spring of cases of malaria among soldiers coming direct from regions in France where the disease is unknown, but who had occupied trenches where the soldiers preceding them had returned from Salonika, having contracted malaria, the *terrain* was flooded and mosquitoes abounded there, among them several kinds of anopheles A confirmation of the possibility of outbursts of malaria, derived from the East, and one having great weight, has now been furnished by M Laveran, who has presented to the Académie des Sciences a research carried out at the Pasteur Institute by M Rouband M Rouband has submitted to bites from indigenous anopheles malarious subjects who have returned from Salonika with the disease upon them He has found in the proboscis of these anopheles living hæmatozoa, and having submitted himself to bites succeeded in contracting malaria of a characteristic form, with periodic febrile accessions and the presence of hæmatozoa in his blood M Laveran concludes from this that it is necessary to keep the victims of malaria away from regions where the mosquito abounds, and to instal on elevated plateaux, where the nights are cold, hospitals reserved for them, the beds being furnished with nets Otherwise there is, he says, a risk that after the war malaria may invade France and render it, or at any rate our warmer regions, as unhealthy as the oriental plains

Breastplates for Soldiers

Inspector General Delorme has called the attention of the Académie de Médecine to the frequency and immediate gravity of penetrating wounds of the thorax and abdomen These represent an enormous proportion of deaths on the field of battle while the adoption of steel helmets has considerably diminished the total of grave wounds of the skull Wounds of the heart, big vessels lungs, and abdominal viscera account for the chief part of the mortality among those of the wounded who die before there is time to render them proper care These wounds in a trench war are due, not for the most part to rifles or machine guns, against which there is no possible protection, but to the bursting of explosive projectiles, hand grenades or shrapnel all of which inflict wounds with a relatively feeble initial velocity, so that a method of protection, which would be powerless against bullets, would meet the case In view of the excellent results given in head wounds against the same sort of projectiles by the steel helmet now used by all the soldiers, M Delorme proposes that the troops should be provided with a breast-plate of the same metal and thickness suspended round the neck and covering entirely the front of the trunk from the root of the neck to the pubis the weight not being greater than that of the helmet, this breast-plate could be placed over the back when kneeling in the trenches or when lying flat on the stomach The Académie de Médecine has unanimously decided to invite the Minister of War to submit the idea to practical experiment

The Disappearance of Small-pox from Paris

At the last meeting of the Seine Board of Health Dr Roux, of the Pasteur Institute reported on the results of small pox vaccination in Paris during 1916 The 800,000 vaccinations performed in Paris at the outbreak of the war and during the year 1915 resulted in the disappearance of small pox from the city, and in spite of the fluctuation in population due to mobilisation, and of the fact that Paris had given shelter to a number of refugees from the invaded districts, the capital remained immune from small pox. This had occurred although all the conditions favourable to the breeding of the disease were notably present, among immigrants both morally and physically reduced, of whom the greater number had not been revaccinated and some not vaccinated at all Small pox infection was repeatedly introduced from outside sources without spreading in the city Dr Roux considers that a prolonged war without small pox is a remarkable fact, proving the efficacy of the prophylactic measures taken The honour of the achievement is due to the vaccination service as well as to the public, which has eagerly responded to the appeals addressed to it by the Government in placards and newspaper advertisements During the year 1916 only a single case of small pox was notified in Paris, and one case was imported from Algiers The latter was an Arab who had not been vaccinated in infancy, and who arrived in Paris during the period of incubation, he was admitted to the hospital Claude Bernard, where he died This Arab worked in a factory where 1000 men were employed, living with his brother The workmen and the brother were vaccinated on the day the disease was recognised and not one of them contracted it

Antirabic Inoculation at the Pasteur Institute in 1916

During the year 1916 1391 persons underwent preventive inoculation at the Pasteur Institute in Paris, six died of hydrophobia, giving a gross percentage of 0 43 But two of the patients developed the disease while still under treatment, and one died less than a fortnight after its conclusion Deducting these three, the revised statistics stand Persons treated 1388, deaths from hydrophobia, 3, mortality, 0 21 per cent

Improved War Bread

The war bread used in France, made from 85 per cent flour, has given rise to much complaint The grey black colour and unpleasant taste have disgusted a number of consumers, with the result that a large amount has been wasted, and the question has arisen whether economy would not be better served by providing bread made with normal flour and limiting its consumption by a special bread card It is not disputed that the present bread keeps badly and quickly undergoes acid fermentation, leading to gastric and intestinal disorders in persons predisposed to dyspepsia. The researches undertaken by MM Lapicque and Legendre at the Ministry of Inventions have now made it possible to grind the flour to the 85 per cent standard and still avoid the greater part of the objectionable qualities They have shown that the constituent of war flour eliminated from 70 per cent (white), known by millers as *recoupettes*, is the part which deteriorates by fermentation and gives rise to acid products By alkalising the flour when it is mixed this injurious fermentation is held in check. M Lapicque bases his conclusions on a simple experiment which can be readily confirmed A piece of slaked lime wrapped in a piece of cloth and held by a string is placed in the bowl from which the baker takes his water for making the dough The quantity of lime which dissolves under these conditions is 1 1000 and exactly the proportion required for checking fermentation, it is therefore only necessary to see that the lime is renewed when exhausted The manufacture involves practically no extra trouble to the baker, while the increase in cost is trifling less than 5 cts for 3000 kilos, 1 gramme of lime being sufficient for 3 kilos of bread The quantity of hydrated lime introduced into the daily diet of the consumer does not exceed 10-20 centigrammes, of which the greater part becomes carbonate during the leavening This amount is harmless, being indeed not greater than that contained in a glass of milk The new war bread is much superior to the old, the dough is well risen, whiter and not viscous, the smell is pleasant and not acid, the crust is excellent The bread keeps well and its digestion does not lead to any disorder The public has been quick to appreciate these advantages, and bakers who have begun to make the bread according to official instructions based on a communication by Dr Lapicque to the Academies of Medicine and Sciences have soon been obliged to increase their bakings It is a curious fact that even animals have noticed the difference between this bread and the other, and having once tasted the new refuse the old.

Joy riding for Whooping-cough

It has long been known that convalescence after whooping cough is accelerated by change of air, by movement from one locality to another, whether from town to country, or from one part to another of the same country From these observations Dr Challamel claims to have deduced an original therapeutic method He assumes that intense oxygenation of the lung is the cause of improvement and therefore utilises the effects of motor driving in the fresh air Under the influence of rapid transit through the air intrapulmonary pressure is probably augmented, with increased ventilation of the air cells The effect is in fact, the same as in the compressed air chamber, but the joy-ride affords a practical method within the reach of all The author has brought to the notice of the Therapeutical Society several cures effected by this treatment, which he has begun to practise at early stages of the disease, as soon as the temperature has fallen A beginning is made with a ride of ½-1 hour at a slow speed in an open motor, the child s face being protected from dust, little by little the length and speed of the ride are increased The treatment can be carried out in all kinds of weather except actual rain, the presence of bright sunlight is not essential Cures have resulted after two rides and as a rule a few prove sufficient The only contra indications are fever and extreme youth The treatment should not be employed for children under the age of three months

Obituary.

DAVID CHARLES REES M R C S ENG L R C P LOND

Mr D C Rees whose death from typhus fever in Port Elizabeth South Africa was recently announced in the *Medical Journal of South Africa*, was educated at Charing Cross Hospital Medical School and after obtaining the Diploma of the Conjoint Board went out to Nigeria with General Lugard s Frontier Force He went up the Niger, saw service there and gained considerable experience in the diseases of the country On his return the London School of Tropical Medicine was just being opened, and Sir Patrick Manson immediately secured his services as the superintendent or as it was then called medical tutor of the school The first session opened on Oct. 1st 1899, and Mr Rees was responsible for organising the lectures and other details of the course So well did he do this that the general scheme adopted by him has held till the present day He was himself an able teacher and had a happy knack of interesting the early students in the laboratory work most of which was usually quite new to them In the summer of 1901 during the vacation he visited the experimental house set up by the School in the Roman Campagna for malarial experiments and he stayed there for several days with Dr L. Sambon and Dr G C Low, the experimenters He then returned to the school for the fourth session and worked in London till the end of the year finally, to the sorrow of all his fellow teachers giving up his appointment to take up the very important one of district surgeon and port health officer at Port Elizabeth Here the opportunity of combating plague and small pox presented itself and ably dealing with these Mr Rees made a name for himself in this line, that he should have died from typhus the disease he was trying to stamp out at the moment is very sad After taking up his residence in South Africa he did not have the time or opportunity to come much to London but he visited the capital on the occasion of his marriage and again three or four years ago when he renewed his old associations with the School of Tropical Medicine

There is little doubt if Mr Rees had stuck to tropical medicine that he would have become famous in that section of medicine Before leaving for Africa he wrote on tropical subjects to the journals and these contributions were always well written and carefully thought out, but work in Port Elizabeth did not allow him to keep up his literary activity At the time of his death Mr Rees was in his fiftieth year and he has left a widow and two children to mourn their loss To them we offer sincere sympathy and the London School of Tropical Medicine and all its teachers who knew and were associated with the deceased will offer them the same

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt B A Bull R.A M C attached London Regiment was educated at Oxford and at St Bartholomew's Hospital London, and qualified in 1915 Shortly afterwards he joined up

Died of Wounds

Capt F Hardie, R A.M C, qualified at Edinburgh in 1900, and was in practice at Southampton prior to joining up

Died

Lieut D Anderson, R.A M C

Wounded

Capt A. C Ransford, R A M C
Capt R G Abercrombie R A M C
Capt G A Macfarlane R.A M C
Lieut C B Simpson, R.A M C
Capt D L Tate R A M C
Capt F G Flood, R.A M C
Capt F A L'Estrange, R A M C, attached Rifle Brigade
Capt M McNiff, R.A M C attached Durham Light Infantry
Lieut G H Adam, R A.M C, attached Lancs Fusiliers
Capt F Black, R.A M C, attached Royal Engineers
Lieut C O Bodman R A.M C
Lieut Col G H L Hammerton, M C R A M C
Lieut J C Pearce R.A.M C, attached Yorks Light Infantry
Capt D O Riddel, D S O, R A M C, attached W Yorks Regiment
Capt W Turner, R.A M C

Slightly Injured

Surgeon A E Panter, R.N

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Second Lieut J B Bailey, East Yorks Regiment, killed in action, only child of Dr J E Bailey of Beverley, Yorkshire
Second Lieut F J Chown Royal Flying Corps, killed in action, only son of Dr F Chown, of Townshend near Hayle, Cornwall
Capt R A. Eakin, King s Shropshire Light Infantry died of wounds only son of Dr J W Eakin of South Mimms, Barnet, and late of Trinidad
C M Richards killed in action only son of Dr M Richards, of Fremantle Western Australia
Second Lieut G D Rose Gordon Highlanders killed in action, second son of Dr G Rose of Aberdeen
Second Lieut E C G Hull Royal Field Artillery killed in action, elder son of Dr E G Hull of Streatham Common London
Flight Sub-Lieut N S Wright, R N, killed son of Dr W S Wright, of Wool, Dorset

FOREIGN DECORATIONS

French

Croix de Guerre —Major (temporary Lieut Col) L J M Deas I M S Temp Capt A L George, R.A.M C

THE HONOURS LIST

The following awards to medical officers are announced The acts of gallantry for which the awards were made are not yet announced All are members of the R A.M C unless otherwise stated The dates in parentheses in those cases where bars have been awarded refer to the number of THE LANCET in which a record of the original decoration will be found —

Bar to the Distinguished Service Order —Maj J S A Rogers D S O (Jan 22nd 1916 p 215)

Distinguished Service Order —Capt (acting Lt Col) J D Bowie Temp Capt D Lees Temp Capt I C Maclean M C Maj (temp Lt Col) L C Montgomery Smith Temp Capt H A Pallant M C Temp Capt J B Orr M C Capt G D Watkins

Bar to the Military Cross —Capt W B Allen V C, M C (Sept 30th 1916 p 620) Temp Lt (temp Capt) L G Bourdillon D S O, M C (Jan 22nd 1916 p 215) Temp Capt R I Harris M C (Nov 18th 1916, p [illegible]) Capt W McFarlane M C (Dec 16th 1916 p 1054) Capt H P Partridge M C (Oct [illegible] 1916 p 777) Capt J D Proud, M C Spec Res (June 23rd 1917 p [illegible])

Military Cross —Temp Capt G M Adam Capt C D S Agassiz Capt A C Bateman Spec Res Temp Capt S J A Beale Capt A

Biggs Spec. Res Temp Capt G A Bird Capt R G Blair Spec Res Capt. F D Blandy Temp Capt C A. Brisco Temp Capt. W T Brown Temp Capt W T C Pearce Temp Capt F B Chavasse Temp Capt V L Connolly Capt T F Corkill, Spec Res Temp Capt. G T Cregan Temp Capt. D St. C Creighton Temp Capt E P Dark Temp Capt H B Day Temp Capt J W Dorling Capt W E FitzGerald Temp Capt. R S Gibson Capt J C G Glassford Australian A M C Capt. H M Goldstein New Zealand M C Temp Capt J C B Grant Temp Capt N Grellier Temp Capt F Harris Temp Capt H H Hepburn Temp Capt. J Hill Temp Lt. R G Hill Temp Lt W J Isbister Temp Lt R S Kennedy Temp Capt A F Laird Temp Capt G E Lindsay Temp Capt. C R MacLeod Temp Capt. D McVicker Temp Capt J I O Sullivan Temp Capt. W H Parry Capt J A Paterson Temp Capt F T Rees Temp Capt. D S Robertson Capt. G W Rogers; Temp Lt J P Ryan Capt. J E Rusby Spec Res Temp Capt A. H D Smith Temp Capt J A Smith Capt H M Spoor Capt R A. Stark Capt J Stephenson Spec Res Capt W H E Stewart Temp Capt T J L. Thompson Temp Capt E A Walker Temp Lt T C D Watt Temp Capt H F Wilson

OBITUARY OF THE WAR

WILLIAM DUNCAN KIRKLAND, M B , Ch M Syd ,

MILITARY CROSS,

MAJOR, AUSTRALIAN ARMY MEDICAL CORPS

Major W D Kirkland who was recently killed on active service at the age of 26 years, was elder son of the late Lieutenant-Colonel Hugh Kirkland M B , Ch.M Glasg , A A M C Born at Bathurst, N S W , he was educated at Coerwell Academy, Bowenfells, matriculating in 1908 Entering St Andrew's College Sydney, he graduated in medicine, with honours, in March, 1913, and became resident medical officer at the Royal Prince Alfred Hospital and later radiographer After a brief but successful period of private practice at Lithgow, N S W , he enlisted in the Australian Imperial Force in May, 1916, and went to France in November He had already held a commission in the Scottish Rifles, C M F , and was soon transferred to the Australian Army Medical Corps He won the Military Cross by attention to wounded close to an ammunition dump in which shells were constantly exploding, and by his disregard of personal danger was instrumental in saving many lives

Major Kirkland was a keen sportsman at school and college which he represented in athletics His friends feel the loss of one who was universally recognised as a pleasant companion and a capable and conscientious officer He was unmarried

JAMES ERNEST STUDHOLME WILSON, M R C S Eng ,

MILITARY CROSS

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain J E S Wilson, who died of wounds on August 23rd at the age of 31 years, was elder son of the late Rev Studholme Wilson, for many years rector of Millbrook, Southampton, and Mrs Wilson, of Stoneleigh, Newport, Salop He was educated at Summerfields, near Oxford, and at Radley, took his medical course at the London Hospital, obtaining the Conjoint qualifications in 1911, and starting at once in general practice at Iver, Bucks

In December, 1915, he obtained a commission in the Royal Army Medical Corps, attached to a Bucks regiment, and left with his battalion in the following May Two months later he was awarded the Military Cross 'for conspicuous gallantry and devotion to duty during operations," after having gone through a very heavy barrage to assist the wounded His colonel writes of Captain Wilson's courage "He was himself hit early in the evening but insisted on going on with his work for six hours His name" he adds, 'will be a lasting and inspiring memory to the officers and men of his battalion "

Captain Wilson married in 1912 Marjory, daughter of the late Thomas Ireland, of Mossley Hill, Liverpool, who survives him with an only child

RONALD LENNOX HENDERSON, M B , Ch.B Edin ,

MILITARY CROSS

CAPTAIN AUSTRALIAN ARMY MEDICAL CORPS

Captain R L Henderson, who died of wounds received in action at Bullecourt in May this year, graduated at Edinburgh University in 1903 before emigrating to New South Wales, where he practised for several years at Lismore In July, 1915, he joined the Australian Army Medical Corps and was sent to Egypt afterwards being attached for several months to No 2 Stationary Hospital at Lemnos When the Australian troops left for France he went with them and remained, except for a few months' illness, until the time of his fatal injury He was hit in the leg in June, 1916, but refused to be evacuated, and tended the wounded of his unit with no thought of personal safety A few days before being wounded himself he was awarded the Military Cross His superior officer writes of him "Always a splendid companion in times of stress, his kindly humour and steadfast devotion to duty made him a favourite with his fellow officers and his men We have lost in him a man of exceptional courage and high character "

ANTHONY TRAILL, M B , Ch B Oxon ,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain A. Traill, who died at a casualty clearing station in France on August 25th, after a few days' illness, was 27 years of age and second son of Edmund B Traill, of Pebmarsh, Essex, and Chirú Traill Argentina He was born near Dublin, and educated at Charterhouse and New College, Oxford While at Oxford he became president of the O U L T C and. won the challenge cup From Oxford he went to Guy's Hospital, obtaining his medical degrees in 1915 In February, 1916 he received a commission in the Royal Army Medical Corps, and went to the front in the early part of this year While still at Oxford he had a severe attack of hæmorrhage from a duodenal ulcer and it was a recurrence of this trouble while attached to a regiment which was the cause of his untimely death. A promising career has been thus cut short

EDMUND FITZGERALD BANNATYNE WILSON,

M D Dub ,

MAJOR SOUTH AFRICAN MEDICAL CORPS

Major E F B Wilson, who died as the result of an accident on August 17th, was educated at Trinity College, Dublin, taking the M B , B Ch in 1881 and the M D in 1890 After practising for a few years in Ireland he went to South Africa, settling in Harrismith, Orange Free State At the outbreak of the Boer War he was still in practice in this town, but managed to escape, and eventually was given a commission as a combatant in one of the Irregular Corps which were formed This he held for a short time, when the need for doctors becoming acute he was utilised as a medical officer He received the Queen's and King's medals for the campaign, and after the war returned to Harrismith when he was appointed district surgeon and railway medical officer under the British régime In this capacity he did much useful work, and was greatly esteemed in the town and district

At the outbreak of the present world war Major Wilson joined up for service with the Union Forces, and after suppression of the rebellion he was sent to German South West Africa At the conclusion of the campaign he joined the South African Overseas Expeditionary Force with the rank of major in the 1st South African General Hospital and after some service with that unit in England proceeded with it to France Although nearly 60 years of age, Major Wilson was of too energetic a temperament to remain with a general hospital, and after serving with the unit for a short period he effected an exchange so as to be attached to the South African Heavy Artillery, and he also did short spells of duty with the cavalry and South African Field Ambulance He died as a result of a fall from his horse Major Wilson leaves a widow and several children, one of whom is serving overseas in the Royal Flying Corps

W R ASPINALL, M B, CH.M. SYD,

MILITARY CROSS

CAPTAIN AUSTRALIAN ARMY MEDICAL CORPS

Captain W R Aspinall who was killed on active service last July at the age of 25 years, was youngest son of the Rev A. Aspinall, M A., of Sydney, N S W He was educated at the Scots College, and from there passed to Sydney University Here he showed a keen interest in all branches of athletics, and won his football 'Blue" in his second year He was captain of the team when war broke out and the same year played for New South Wales He also took a leading position in the social life of the University, and was elected Vice President of the Union Graduating M B Ch M with honours in September, 1915, he was appointed house surgeon at Sydney Hospital

Early in 1916 he joined up and served some time in Egypt before being invalided to England with pneumonia He went to France later in the year, and after serving some months with a field ambulance on the Somme, was attached to a field artillery brigade After several months of consistently fine work he was awarded the Military Cross for conspicuous gallantry under most trying circumstances During a serious attack he worked all day under heavy machine gun and shell fire without cover, tending friend and foe alike with absolute disregard for his own safety He was killed at his guns In the trenches as in other walks of life he set a standard of personal courage and cheerfulness under all conditions that gained him universal respect

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ARMY MEDICAL TRAINING IN AMERICA —A correspondent writes from the Medical Officers' Training Camp, Fort Benjamin Harrison Indiana "We are getting a great amount of thorough instruction The ground is gone over rapidly possibly because of the shortness of time allowable before our services are needed The men are buckling down, and almost without exception are earnest and patriotic in their work It is a remarkable thing to see popular and successful physicians and surgeons giving up fine incomes and living in this great army training camp and putting up cheerfully with its lack of conveniences There are some 1200 M D s here now besides line officers all getting ready to go out to care for and train the hundred thousands of our new draft army "

THE NATIONAL WAR AIMS COMMITTEE S LEAFLETS —The National War Aims Committee has issued a series of leaflets of a very opportune sort The first 15 are (1) Prime Minister s Speech, (2) Interview with General Sir W Robertson, (3) What Are We Fighting For' (4) There Must Be No Next Time', (5) Winning the War, (6) The Nation Made War and the Nation Must Make the Peace, (7) The Truth About the War, (8) Labour and the War (9) President Wilson on Peace Terms and War Aims (10) The Kaiser Manner, (11) The Greatest and the Last Crusade' (12) Gentlemen' of Germany, (13) Peace at Germany s Price (14) Right and Might a Lesson which Germany Must be Made to Unlearn (15) A Kalendar of Kultur Of these No 10 The Kaiser Manner consisting of only one leaf is perhaps the one which will attract most attention as most of the other speeches have been read in the daily newspapers more than once The reverse of this leaf contains a reproduction by the special permission of the proprietors of *Punch* of a drawing by Bernard Partridge entitled the Knightly Manner and depicts the Kaiser in armour standing over the prostrate body of the female personification of Belgium who says 'As long as there is motion in my body and life to give me words I'll cry for Justice to which the Kaiser replies 'Justice shall never hear you I am Justice This is explained parenthetically by a reminder as follows (There is no longer any international law —The Kaiser to Mr Gerard) This powerful picture will entice the observer into a reverie of right and wrong, and truth and fiction It is founded on a passage in Beaumont and Fletcher

Correspondence.

"Audi alteram partem "

A STATE-AIDED MIDWIFERY SERVICE

To the Editor of THE LANCET

SIR,—The time has arrived when the question of the midwifery service of the country merits consideration The Act of 1902 was mainly the work of 'those who claim that they are generally considered to be most competent to advise on such a subject"—namely the Fellows of the Royal College of Physicians of London The very large majority of the medical profession were, and are, only too well aware that the subject is in the main one of economics, and can never be settled by the establishment of a State controlled body of nurses

The result of legislation has been that districts which cannot support a midwife have remained unprovided for, although a bulky tome is annually issued which contains the names of thousands of women who are licensed to practise Improvement can only be obtained by a process of decentralisation The money which is now spent upon the operations of the Midwives Board should be devoted to work carried on by sanitary authorities and that Board should be abolished Sanitary authorities have now organisations for carrying on the work and are quite competent to decide upon the fitness of the women they employ, and they should be subsidised out of the money saved by the extinction of the Midwives Board.

The attempt to make a new class of midwifery practitioners has failed, and if the establishment of such a class is desired a sufficiently equipped class must be made and the subject of midwifery removed from the compulsory subjects of medical students At the present time midwives do not occupy a position which is quite fair to them They are not considered to be competent to carry out their work without the aid of stringent rules and regulations They consequently have no responsibility so long as these rules are obeyed Some are incompetent and others competent and no rules will make those competent who are incompetent If a sufficient class must be obtained it must be a class who are so competent that their work can be carried on without rules and regulations The repeal of the Act of 1902 is urgently required

I am, Sir, yours faithfully,

LOVELL DRAGE.

Hatfield Oct 1st 1917

*** Dr Lovell Drage attributes much to Fellows of the Royal College of Physicians of London The General Medical Council, after deliberations in which the representatives of all the medical faculties and corporations took part suggested many changes in legislation in the Bill which later became law The question to which he alludes has already become urgent and we publish this week notes on the course taken in St Pancras and at Chelmsford —ED L

SACRO-ILIAC STRAIN

To the Editor of THE LANCET

SIR —I beg permission to contribute a few observations on the annotation in your issue of Sept. 29th on the above named condition It is true indeed "a lesion which the general practitioner often sees but fails to recognise but whether this is 'because it has been described only in recent years mainly by American orthopædic surgeons' is open to question A much more potent reason is that it has not been accepted as a clinical entity by English surgeons at all When I read a paper[1] on the subject with numerous references to the literature and notes of nine cases before the Orthopædic Section of the Royal Society of Medicine in 1913 it was greeted with buckets of cold water the President cynically remarking that in all his experience he had never been fortunate enough to meet with a single case and when I have tried to interest others in this condition I have been received with looks of blank incredulity The condition of course undoubtedly exists and the medical profession should be most grateful to you for making it known Its dominant feature, however is not pain over the sacro-iliac point in front, but pain over the sacro iliac joint behind I have seen many cases now, but never one in which this sign was absent

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[1] See Transactions of the Royal Society of Medicine vol

As regards treatment, does not your annotation present altogether too rosy a view? "Treatment is simple and gives most satisfactory results" I have found treatment most difficult and disappointing, having only been able to cure completely two cases The keynote of the treatment is to compress the two halves of the pelvis together, but in actual practice this is not easy Encircling strips of plaster applied tightly cause sores at their edges after one or two days, and have to be left off while the sores heal, belts have all proved unsatisfactory while manipulation under an anæsthetic relieves for a time, only to be followed by a recurrence of the trouble The best apparatus has proved to be an ordinary corset with reinforcing webbing bands around the pelvis

Finally, as to nomenclature For reasons I do not propose to enter into here, there are many objections to the term "sacro iliac *strain*" These are all got over by describing the condition as "*painful* sacro iliac joint"

I am, Sir, yours faithfully,
PAUL BERNARD ROTH
Harley street, W, Sept 29th 1917

A WAR MEMORIAL TO OLD EPSOMIANS

To the Editor of THE LANCET

SIR,—Two informal meetings of old Epsomians have been held regarding the question of raising a memorial to old Epsom boys who have fought and fallen in this war It was decided that a meeting should be held at the offices of the College, 37, Soho-square, London, W, at 4 P M, on Friday Oct 12th It is hoped to get an expression of opinion at that meeting as to whether such a memorial should be raised, how it should be raised, and what form such a memorial should take A treasurer and secretaries for this memorial fund will be appointed The Rev W Barton, the headmaster of the school, and myself are acting as secretaries until the regular appointments are made As addresses are so uncertain it has seemed desirable to notify old Epsom boys of this meeting through the newspapers Will all who can come to the meeting and will those who cannot come express their views in a letter addressed to me?

I am, Sir, yours faithfully,
EDRED M CORNER
7 Harley-street, London, W 1 Sept. 28th 1917

A CASE OF PERIODIC ATTACKS OF PYREXIA

To the Editor of THE LANCET

SIR,—The case recorded by Dr R V Solly under the above heading in your issue of Sept 8th (p 386) has considerable resemblance to one of rat-bite fever The regular pyrexial attacks with high temperature and "well" intervals, the erythematous eruption, the cessation of the disease after the administration of galyl, and the seven weeks' duration before the pyrexial attacks began to become irregular, all coincide closely with the course of a case of rat-bite fever

I am, Sir yours faithfully
R TANNER HEWLETT, M D Lond
Chandos-street, W C Sept 24th 1917

"RECONSTRUCTION"

To the Editor of THE LANCET

SIR,—I have read with great pleasure the leading article entitled "Reconstruction" in your issue of Sept. 15th and warmly welcome the suggestion of the formation of a board such as you put forward to consider and interpret facts relating to professional reconstruction after the war Since the outbreak of war there has been a tendency on the part of certain of those remaining at home to try to create a new Heaven and new earth, in the absence of their betters with themselves as archangels This tendency has resulted in a complete revolution of our political electorate, and now threatens an equally drastic change in our professional status Apart from the impertinence, which surely is sometimes evident, it is also an injustice During the last two years I have been in many parts of the world and I can only say that amongst the hundreds of medical officers that I have met there exists a real mistrust as to our future status—a general feeling that our interests are being neglected and that our future is being decided overmuch by the "indispensables" and the "embusquers," who suffer from glib tongues and lately from overweighted pockets I hope that others will give you their views on the matter, especially those connected with medical units serving abroad

I am, Sir, yours faithfully,
A HURRELL STYLE, M A M D Cantab,
Temporary Captain R A M C
Royal Societies Club St James's street, S W Sept 28th 1917

THE SERVICES

ARMY MEDICAL SERVICE

Temp Col. F M Caird (Lieutenant-Colonel R.A.M C T F) relinquishes his temporary rank on re posting

Temporary Lieutenant-Colonels to be temporary Colonels: Sir T Myles C B Sir W A Lane C B J Swain C.B Sir B G A Moynihan C B W Taylor A. Carless Sir A Chance A W Mayo Robson C V O C B C J Symonds C B C M G T H Openshaw C B C M G, W Hunter C B W Aldren Turner C B, H M. Davy C B

Honorary Lieutenant Colonels to be temporary Honorary Colonels: J L Thomas C.B, C M G J F O Carroll

ROYAL ARMY MEDICAL CORPS

Major A. N Fraser D S O to be temporary Lieutenant-Colonel whilst commanding a Training Centre

Temp Major R. Davies-Colley to be temporary Lieutenant-Colonel whilst specially employed

Major (Bt Lieut. Col) H J Crossley to be acting Lieutenant-Colonel whilst in command of a Stationary Hospital

Major (Bt. Lieut -Col) H J Crossley relinquishes the rank of acting Lieutenant-Colonel on re-posting

Major (Bt Lieut Col) C R S Bradley relinquishes the rank of temporary Lieutenant-Colonel on ceasing to command a Training Centre

Temp Capt. E P G Causton to be temporary Major

H H K Sparrow and P A Sullivan late temporary Captains to be honorary Captains

Temp Lieuts to be temporary Captains H McLean R A. Campbell R A. MacNeill G H Fraser J M. Johnstone J J Moriarty T T B Watson T H Jackson J A Noble, J H Sharpe W E Hodgins A. S Carter, T Jones A H Davies R H Stoddard E E T Nuthall F P Wigfield F Stevenson J McN Murray V E Somerset, J C M Bailey R K G Graves F Newey N N Haysom E G Howell C H Comerford R J MacKessack P Pollard J A. Renshaw A H. H Howard D G S Gartshore L C Blackstone C S U Rippon H D Stewart A. Fothergill H V Taylor J G Johnstone M C Stark C D Day J W Steel R W Annison, K. H Stokes W A Simpson J Warnock J E P Shera, N C Lake C F Graves, A S Holden A. H Burnett O C Morgan N Davidson A. C Craighead T L. Henderson A Kerr W C Fraser K. McLay W W Johns W S Angus H G E Williams J B Whitfield J M Jarvie F W Murray R J Wilson J D Judson W R. Wiseman D G C Tasker G E A Petrie, H F Woods A Duguid R. S Barker W L. Johnson F W Grant C Tylor P Henderson G A. Lyons, T D H Holmes, T Jackson H S Banks F G Bergin

To be temporary honorary Lieutenants: B E Hawke and C H Evans

Officers relinquishing their commissions Temp Major W D Knocker (on account of ill health) Temp Capts F W Lyle (granted the honorary rank of Captain) H de C Dillon (on acount of ill health contracted on active service granted the honorary rank of Captain) J Brunton M A'B McCarthy (granted the honorary rank of Captain) J Brunton M A'B McCarthy (granted the honorary rank of Captain) A H H Sinclair N Grace S G Vinter, C H Brookes, J S S Perkins A H H Sinclair N Grace S G Vinter, C H Brookes, J S S Perkins A S Anderson A G W J Hicks W J Gow C D Pile F C Drew A S Anderson A G Watson Temporary Lieutenants P E Howie (on account of ill health) J Mellor A. T Thurston R Lee R Jones D Penman G Holman J Mellor W S Kidd H W Heasman N F Stallard W H Gray J R Kerr J Loftus A F Martin M Waldron J S F Weir J Findlay R S Doran C H Houghton H Nicol, R. H Jamieson T H Underhill T A Matthews J M Hall E J Fitzgerald H G Ramsbottom, W E Bramley Moore H A Fenton S J Yeates, J H C Thompson S J Moore, W S McDougall J T Bailey W McM Millar H H Hiley E G Fearnsides T G Maitland, J E Richards G F Longbotham J B McCutcheon J D S Sinclair, W Garstang J R Frost, E W Atkinson, G R Hughes J R Micallef A. Kinsey Morgan

SPECIAL RESERVE OF OFFICERS

Second Lieut. S Riddiough, from Unattached List, T F, to be Lieutenant

TERRITORIAL FORCE.

Major (temp Lieut Col) E H Cox relinquishes his temporary rank on ceasing to command a Field Ambulance

Capt C E Silvester to be Major

Capts T M Jamieson and E H E Stack are restored to the establishment

Capt (temp Major) W B Secretan relinquishes his temporary rank on alteration in posting and is restored to the establishment

Capts. H N Fletcher and F A S Hutchinson are seconded for duty with a General Hospital

Capt. J D Holmes is restored to the establishment.

Second Lieut C P Matthews from East Surrey Regiment, to be Lieutenant.

F Isdell to be temporary Lieutenant and Medical Officer 4th Battalion Essex Volunteer Regiment

JAPANESE ORDER

The Order of the Sacred Treasure of the First Class has been conferred on Surg Gen Sir Arthur William May K C.B, K.H P by the Emperor of Japan

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

HICHENS F M D Lond has been reappointed Medical Officer for Stythians by the Redruth Board of Guardians

MEACHEN G N, M.D B S Lond has been appointed Tuberculosis Officer for the Saffron Walden and Braintree District of Essex.

SIMPSON, S M B B Ch Dub, District Medical Officer and Public Vaccinator for the parish of Llanelly Brecon.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

BETHNAL GREEN METROPOLITAN BOROUGH OF —Female Assistant Medical Officer of Health Salary £400 per annum

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £175 per annum with board &c.

BOLINGBROKE HOSPITAL, Wandsworth Common, S W —Resident Medical Officer and House Surgeon Salary £200 and £150 per annum respectively each with board &c

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon. Salary at rate of £120 per annum with board &c

BURY INFIRMARY —Junior House Surgeon Salary £150 per annum with board &c

CAMBRIDGE, ADDENBROOKE S HOSPITAL —House Surgeon and House Physician Salary at rate of £300 per annum each, with board &c

CHARING CROSS HOSPITAL.—Medical Registrar Salary £60 per annum, with lunch and tea.

COLMONELL PARISH LOWER DISTRICT OF —Medical Officer Salary £70 per annum Vaccination salary £2 per annum

DERBY DERBYSHIRE ROYAL INFIRMARY —Resident Surgical Officer

KENSINGTON BOARD OF GUARDIANS —Resident Medical Superintendent for Marloes road Institutions Salary £650 per annum with use of house &c

LIVERPOOL INFIRMARY FOR CHILDREN —Two Resident House Physicians for six months Salary at rate of £90 per annum each with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead road, N W —Assistant Resident Medical Officer Salary £120 per annum with board &c

NEW HOSPITAL FOR WOMEN Euston road —Female Resident Medical Officer at House of Recovery New Barnet. Salary £60 per annum with board &c

NOTTINGHAM GENERAL HOSPITAL —Female House Surgeon for six months Salary at rate of £250 per annum with board &c

NOTTINGHAM AND MIDLAND EYE INFIRMARY —Female House Surgeon Salary £200 to £250 per annum, with board, &c

OLDHAM ROYAL INFIRMARY —Third House Surgeon Salary £225 per annum with board &c

OXFORD EYE HOSPITAL.—Resident House Surgeon

PORTSMOUTH BOROUGH MENTAL HOSPITAL.—Locum Tenens Assistant Medical Officer Salary 7 guineas per week with board, &c

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham N —Senior House Surgeon Salary at rate of 7 guineas per week with board &c

QUEEN'S HOSPITAL FOR CHILDREN Hackney road Bethnal Green E —House Physician Casualty House Surgeon and House Surgeon for six months Salary £100 per annum with board &c.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234 Great Portland street W —Resident House Surgeon Salary £100 per annum with board &c

SALISBURY GENERAL INFIRMARY —House Surgeon. Salary £150 per annum with board &c

SHEFFIELD ROYAL INFIRMARY —Casualty Officer for six months. Salary £150 per annum with board &c

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon Salary £100 per annum with board, &c

SOUTHAMPTON ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. —House Physician

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum with board &c

WALSALL EDUCATION COMMITTEE —Temporary School Medical Inspector Salary at rate of £400 per annum

WEST BROMWICH DISTRICT HOSPITAL —Senior House Surgeon unmarried Salary £160 per annum, with board &c.

WHITEHAVEN TOWN COUNCIL AND RURAL DISTRICT COUNCIL.—Medical Officer of Health. Salary £500 per annum

WINCHESTER, HAMPSHIRE COUNTY COUNCIL.—Temporary Assistant County Medical Officer of Health Salary £400 per annum

THE Chief Inspector of Factories Home Office London S W. gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Hastings (Sussex) and at Cleator (Cumberland)

Births, Marriages, and Deaths.

BIRTHS

HUTCHINSON —On Sept 26th at Lower Kings road Kingston-on Thames the wife of Major E L Hutchinson A.A.M C of a daughter

ROSS HADDON —On Sept. 25th at Overstrand mansions S W the wife of Captain D A Ross Haddon M C R A.M C. of a daughter

WARREN —On Sept. 22nd at Arden Cottage Greenford gardens, Greenford Southall to Captain and Mrs Richard Warren, of 23 Wimpole-street, W —a daughter

MARRIAGES

ARMOUR—JOHNSTON —On Sept 27th at St Luke s Church Liverpool T Armour M B F R C S Ed Captain R A.M C T F to Margaret Johnston daughter of the late Mr H Johnston

HILTON JONES—DAVIES BRYAN —On Sept 25th at Engedi C M. Chapel Carnarvon Captain R Orthin Hilton Jones, M.C., R A M C to Olwen only child of Mr and Mrs Edward Davies-Bryan of Cairo Egypt, and Carnarvon

PARKINSON—LE BROCQ —On Sept 29th at St Michael s Church Southampton John Parkinson M D M R C P temporary Captain, R A.M C to Clara Elvina Le Brocq late Sister Q A.I M N S R

DEATHS

BULL.—On Sept 16th killed in action Captain B. A. Bull R A.M C attached London Regiment.

HARDIE —On Sept 20th, died of wounds Captain F Hardie, R A.M C (T)

ROBERTS —On Sept 27th Arthur Milson Roberts M.D aged 69

WALKER.—On Sept 30th at Edgbaston, R P Walker M R C S Eng, L.S.A. in his 84th year

N.B —A fee of 5s is charged for the insertion of Notices of Births, Marriages and Deaths

BOOKS, ETC, RECEIVED

LEA AND FEBIGER Philadelphia and New York
The Treatment of Diabetes Mellitus with Observations upon the Disease based upon 1300 Cases By E P Joslin M D Harv Second edition revised $4 50

LONGMANS GREEN AND Co London University Press Manchester
Founders Day in War Time An address delivered on March 23rd 1917, at a memorial service for members of Manchester University who have fallen in the War By Sir Adolphus William Ward, Litt D F B A. 1s 6d net.

MACMILLAN AND Co, London
Human Physiology By Professor Luigi Luciani (Rome) Translated by F A. Welby, with Preface by J N Langley F R S Vol IV Edited by Gordon M Holmes M D The Sense Organs 21s net

MENTAL CULTURE ENTERPRISE, 329 High Holborn W C 1.
The Principles of Rational Education By Charles A Mercier M D, F R C P F R C S 2s 9d net

PITMAN, SIR ISAAC AND SONS London
Soap: its Composition Manufacture and Properties By W H Simmons, B Sc Lond F C S 2s net

PUTNAM S (G P) SONS London and New York
Hygiene in Mexico A Study of Sanitary and Educational Problem By Alberto J. Pani C E Translated by Ernest L. de Gogorza.

SANITARY PUBLISHING COMPANY, London
Sanitary Law and Practice By W Robertson M D Glasg D P H. and Charles Porter M D B Sc M R C.P Edin. Fourth edition revised. 12s 6d net

UNIVERSITY OF CHICAGO PRESS Chicago
Food Poisoning By Edwin Oakes Jordon Chairman of the Department of Hygiene and Bacteriology University of Chicago $1 net

WRIGHT JOHN AND SONS Bristol
Blood Pictures An Introduction to Clinical Hæmatology By Cecil Price-Jones Captain R A.M C (T) 6s 6d net.

METEOROLOGICAL READINGS

(Taken daily at 8.30 a.m by Steward's Instruments)

THE LANCET Office Oct 3rd 1917

Date	Rain fall	Solar Radio in Vacuo	Maximum Temp Shade	Min Temp	Wet Bulb	Dry Bulb	Remarks
Sept. 27	0·05	99	67	52	52	53	Fine
„ 28		89	64	50	52	54	Fine
„ 29		102	66	52	53	54	Fine
30		96	70	48	53	54	Fine
Oct 1	..	92	70	50	61	52	Fine
„ 2		95	72	48	51	52	Foggy
„ 3		93	66	62	57	59	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL. —The two Goldsmid Entrance Exhibitions, offered annually for competition in September were awarded this year to Mr H L Heimann and Mr V R Khanolkar, both of University College, London

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY —A course of lectures on Tropical Hygiene will be given by Mr H. G Plimmer, F R S, professor of comparative pathology, in the lecture room of the Botany Department of the College, Prince Consort road, South Kensington, London, S.W, on Tuesdays from 4–5 P M, during the first half of the session 1917–18, beginning on Oct 9th The course is intended for officers in H M Forces who are likely to be sent to hot countries, and will deal with infectious diseases, their causation and prevention, advice as to the maintenance of health in tropics, and the treatment of minor complaints and injuries. The fee for the course is £1 Application to the Registrar of the Imperial College

Notes, Short Comments, and Answers to Correspondents.

GILBERT AND ELLICE ISLANDS

A REPORT recently presented to Parliament on these two groups of islands in the Pacific—formerly constituting a Protectorate, but formally annexed to the Empire in 1915 —contains some interesting references to the health and medical administration of the territory The Gilbert group, situated between 4° N and 3° S latitude and 172° and 177° W longitude, consists of 16 islands, with several smaller islands or islets depending upon them, and the Ellice group between 5° S and 10½° S latitude and 176° E and 179 58° W longitude, consists of nine islands (in which Ocean Island, or Paanopa, is included) The total area of the two groups is only 180 square miles, and the population, according to the Census of 1911, comprised 30 523 natives, 301 Asiatics, and 297 Europeans The births recorded in 1915–16 totalled 959 and the deaths 726

In the Gilbert Islands a serious epidemic of influenza carried off many old people and weaklings in 1914–15 but the figures for 1913–14 and 1915–16 were most satisfactory in view of the fact that for many years previously the population of the islands was decreasing to such an extent that it was predicted that the race would soon be exterminated owing to contact with civilisation It is true that the white man introduced syphilis and was probably responsible for the scourge of tuberculosis but medical science is using every effort to restore the balance and to bring relief and improved health to these simple and kindly folk During the past three years the expenditure on the medical department has been very largely increased There was a time when sickness was hidden and when medical inspection visits were feared In 1913–14 a determined effort was first made to put the medical department on a sound footing It was realised that this result could not be achieved by the importation of medical skill only; it was essential to catch and to hold the interest and confidence of their own people to demonstrate that the power to alleviate and to heal could be learnt by their kith and kin and that operations were *not* hazardous miracles to be performed in secret under the white man s spell It is already evident from statistics that some measure of success is being attained In spite of the difficulty of transport due to the need of a Government vessel and to the curtailment of the trading steamer service in war-time the number of cases admitted into the hospitals and the operations performed are proof that these people have realised what medical attention can do for them

The results of the treatment of yaws by salvarsan or by its equivalent galyl or kharsivan confirm the reports from the West Indies and elsewhere The native name given to this drug is Te Iti" or lightning from the marvellous rapidity of the cure Satisfactory results have also been obtained by the use of this drug in cases of syphilis which is prevalent still in the groups this however is naturally a slower process especially in its advanced stages It is, unfortunately still difficult to get the patient to realise the gravity of this disease in the early stages The need for a plentiful supply of galyl or kharsivan cannot be too earnestly insisted on In cases of elephantiasis prevalent in several of the islands kharsivan has also been used with good results

The treatment of tuberculosis the greatest scourge of the colony is a matter which calls for the patience and perseverance of those on the spot Tuberculin may be used in surgical cases but the various precautionary measures do not appeal to the careless easy going native Tuberculosis is believed to have been originated amongst these people by the wearing of European dress which led to the discontinuance of the practice of oiling the bodies which was formerly done as soon as the cold westerly winds set in with heavy rains Though efforts have been made to persuade the natives to revert to their native dress and to the lubrication of the body it is feared that the attempt has been made too late It is natural that the traders are averse to this since probably 50 per cent of the money which they pay out for produce comes back to them from the sale of tropical clothing to natives The missions al o have shown no wish to help this movement Shirts and trousers for men and the long sweeping garment for women are the outward signs of Christianity It is practically only among pagans and in the Government gaols that the sensible native dress may now be seen

The headquarters of the medical staff are at Tarawa with branch European run hospitals at Tabiteauea in the Central Gilberts and at Funafuti in the Ellice group The institution of a training school for native medical students at Tarawa has proved a great boon to the colony The natives have come forward readily for instruction and every island is now in charge of a medical dresser of fair experience As opportunities of relief offer these dressers return to the Central Hospital for a further period of instruction and the standard of efficiency is gradually raised throughout the native hospital During the year 1175 cases were admitted to the Tarawa Central Hospital and 619 operations were performed At the Funafuti hospital 535 cases were admitted and 180 operations performed Since November 1915 the European medical staff has again been reduced to one this officer is however ably assisted by two native medical practitioners to one of whom (Sowani) the colony is indebted for many years of most faithful and efficient service The services of a white matron have now been acquired for the Tarawa hospital and a scheme for the training of half-caste girls as maternity nurses has been started During the year a white ward for the treatment of European patients has been opened and has already proved useful

The erection and equipment of a leper asylum upon an isolated islet awaits acquisition of a Government vessel for the collection of cases Each island is at present equipped with its own asylum but there is always danger of contact or intercourse and this scourge cannot be wiped out until a central isolated asylum can be constructed and maintained with the assistance of a Government vessel

THE SUPER HEN

To the Editor of THE LANCET

SIR,—Amongst some eggs which I bought last week there was one which was rather large, and which I voted was the progeny of a goose and included in my purchase by mistake On cracking it it yielded two fine yelks I used to look after a number of hens for several years and collect their eggs and cook a good many, but although I have seen some curious specimens of twisted and fantastic shaped shells, and of shell less eggs, I have not met with one before having two yelks

I have had the curiosity since to look for information in your columns In THE LANCET of Sept 26th, 1885 there is an account of a hen's egg with two shells one inside the other, and in the issue of Dec 5th, 1885, a letter describes an egg with two shells, each shell when broken yielding yelk and white, and in that of Oct 17th, 1885, a correspondent wrote that his medical partner had a similar egg and requested Professor Huxley's opinion on it "It is very simple," said Huxley, "reversed peristaltic action takes place in the oviduct after the shell is formed, the egg is driven back, and when again descending gets a coating of yelk, albumen, and shell" But I do not see any record of a double yelk mentioned —I am, Sir, yours faithfully,

Oct 3rd 1917 A READER

A CORRECTION

To the Editor of THE LANCET

SIR,—May I correct a statement in your reviewer's extremely considerate remarks upon the last edition of my little book on anæsthetics? Anoci-association is not omitted, as he states, but is briefly described in the pages headed "Nitrous Oxide and Oxygen in Major Surgery" But the word does not occur in the index

I am, Sir, yours faithfully

Harley street, Oct 2nd 1917 J BLOMFIELD

Medical Diary for the ensuing Week.

SOCIETIES

MEDICAL SOCIETY OF LONDON 11 Chandos-st Cavendish sq, W

MONDAY —8 P M Annual General Meeting 8 30 P M Presidential Address:—Sir StClair Thomson: The Founder and Foundation of the Medical Society Discussion on War Bread and its Effects on Health (introduced by Dr R Hutchison and Dr E I Spriggs)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

POST GRADUATE COLLEGE West London Hospital Hammersmith road W

MONDAY —2 P.M. Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye Dr Simson: Diseases of Women

TUESDAY —2 P.M Medical and Surgical Clinics X Rays Mr Baldwin Operations Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet: Diseases of the Skin

WEDNESDAY —10 A.M, Dr Saunders: Diseases of Children Dr Banks Davis: Operations of the Throat, Nose and Ear 2 P M Medical and Surgical Clinics X Rays Mr Pardoe: Operations

THURSDAY —2 P.M Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye

FRIDAY —10 A.M Dr Simson: Gynæcological Operations 2 P.M, Medical and Surgical Clinics X Rays Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin

SATURDAY —10 A.M Dr Saunders: Diseases of Children Dr Banks Davis: Operations of the Throat, Nose, and Ear Mr B Harman: Eye Operations 2 P M Medical and Surgical Clinics X Rays Mr Pardoe: Operations

NORTH EAST LONDON POST GRADUATE COLLEGE, Prince of Wales s General Hospital Tottenham N

MONDAY —Clinics:—10.30 A.M. Surgical Out patients (Mr E Gillespie) 2.30 P.M, Medical Out-patients (Dr T R Whipham): Gynæcological Out-patients (Dr Banister) 3 P.M, Medical In patients (Dr R M Leslie)

TUESDAY —2.30 P M Surgical Operations (Mr Carson) Clinics:—Medical Out-patients (Dr A. G Auld) Surgical Out-patients (Mr Howell Evans) Nose Throat, and Ear Out-patients (Mr O H Hayton) Radiography (Dr Metcalfe) 3 30 P M Medical In patients (Dr A. J Whiting)

WEDNESDAY —Clinics —2.30 P M Throat Operations (Mr O H Hayton) Children Out-patients (Dr T R Whipham): Eye Out-patients (Mr R P Brooks); Skin Out-patients (Dr H W Barber) 5 30 P M Eye Operations (Mr R. P Brooks)

THURSDAY —2.30 P M Gynæcological Operations (Dr A. E Giles) Clinics —Medical Out patients (Dr A. J Whiting) Surgical Out-patients (Mr Carson) Radiography (Dr Metcalfe) 3 P.M, Medical In patients (Dr R M Leslie)

FRIDAY —2.30 P M Surgical Operations (Mr Howell Evans) Clinics:—Medical Out patients (Dr A. G Auld) Surgical Out-patients (Mr E Gillespie) Eye Out patients (Mr R P Brooks)

The following journals, magazines &c. have been received:—British Journal of Ophthalmology Philippine Journal of Science American Journal of Orthopedic Surgery La Riforma Medica, Surgery Gynecology and Obstetrics American Journal of Obstetrics Practitioner London Hospital Gazette St Bartholomew s Hospital Journal American Journal of Surgery

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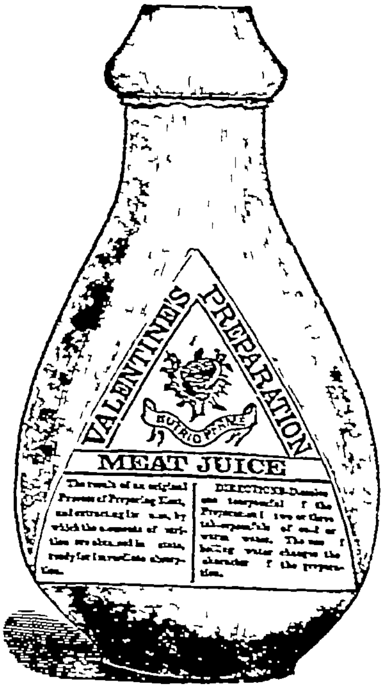

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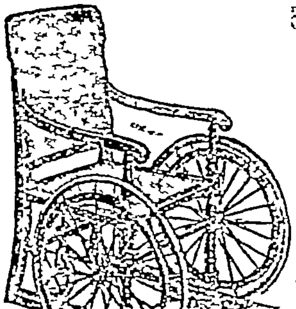

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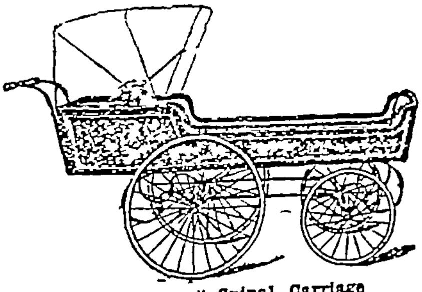

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Report
UPON
AN INVESTIGATION INTO THE EFFECTS OF COLD UPON THE BODY *

BY NORMAN C LAKE, M D M S, D Sc LOND, F R C S ENG,
ASSISTANT SURGEON QUEEN'S HOSPITAL FOR CHILDREN
TEMPORARY CAPTAIN R.A.M.C

DURING investigations into the growth of tissues *in vitro* upon the lines of Carrel's[1] well known work it became necessary to investigate the effects of temperature changes In particular the effect of cold upon the tissues was studied, and, as will be seen from the experiments detailed, led to the conclusion that cold down to – 6° C, brought about a state of suspended animation in which for considerable periods the tissue could be preserved intact and its potential vitality maintained at the normal standard This rather heterodox conclusion necessitated a re investigation of frost-bite,' for if the effect of chilling" of the tissues is to produce a state of suspended animation, then it will be illogical to accept theories which assume a direct effect of a degenerative and destructive nature. The term "frost-bite" is here used in its widest sense, and includes such conditions as "trench foot." Later on we shall attempt to separate these into two entities having as their basis different pathological processes

In the more recent of the writings upon the subject the pathology of the condition has been explained in various ways Lorrain Smith Ritchie and Dawson,[2] after a series of very excellent investigations both from the clinical and experimental points of view, came to the conclusion that the pathology of "trench foot' was the same as that of true frost-bite, although of much less intensity and that both are primarily due to the direct effect of cold upon the tissues, although other factors, such as pressure, had a determining effect Many other writers agree with them In several recent articles, written chiefly from the clinical standpoint it has been suggested that vaso-motor disturbances play an important part, these, again, may be divided up into many smaller groups Some explain the effects by assuming a lack of oxygen to the part, others by lack of nutritive plasma, and others again by special effects upon the endothelium of the vessel walls That other factors than cold play a part in the production of ' trench foot" is undoubted but in all probability these factors must be considered as secondary and entirely subsidiary to the temperature variation Rideal and Waller[3] have, for instance, investigated the effects of water and saline solutions upon the feet, but failed in any of their experiments to produce conditions which resembled trench foot' and it is doubtful whether the slight disturbances of sensibility which they produced in any way correspond to the paresthesiæ which occur when the additional factor of cold is brought into play These questions will be dealt with, however, more fully later on

In considering the pathology of frost bite, it is logical at least to say that the effects are either purely local or are reflex with the possible combination of both, and an endeavour has been made to bear this constantly in mind

The details of the work which follow are divided up into five groups of experiments —

1. Investigation into the effects of cold upon the individual tissues when detached from all extraneous influences, whether of the circulatory or nervous system, such tissues may conveniently be called isolated tissues
2. Investigation into the effects of cold upon the blood.
3 Investigation into the effects of cold upon the tissues in normal relationship to the circulatory and nervous systems
4 Investigation into the effects of cold upon the tissues in abnormal relationship to the circulatory and nervous systems
5 Finally the conclusions drawn from these investigations both with regard to pathology and treatment

(1) *Investigation into the Effects of Cold upon the Individual Tissues when Isolated*

The method of growing tissues *in vitro* devised by Burrows[4] and improved by Carrel[5] lends itself very excellently to this work It consists, in brief, of explanting small portions of tissue into media, the chief basis of which is plasma. The portion of tissue used is small and, having been placed on a coverslip, is surrounded by the medium, and when this is coagulated or set the whole is inverted on to a celled slide, sealed with paraffin, and incubated to 37 5° C After a varying number of days the tissue can, if necessary, be transplanted into fresh medium, after washing in Ringer solution, and in this way kept alive and actively growing for an indefinite period If these growths are not transplanted they sooner or later die from the accumulation of products of metabolism in the media The effects of cold may be investigated either by exposing the tissue *en masse* before explantation or by placing the slide with the explanted growing tissue into the required temperature

In all between 500 and 600 experiments have been made in which the tissue has been exposed for some period to a greater or less degree of cold, and the individual experiments quoted here have been repeated several times, in some cases over 100 times, with practically constant results The tissues used were obtained from rabbits, mice, frogs, and in many cases from human beings during operations

Practically every tissue in the body has been explanted, including heart, endothelium, connective tissue, skin, thymus, thyroid, kidney, liver spleen, testicle, ovary, brain, nerve pituitary, bone, mucosa, pancreas, &c The media used included Ringer's solution, Ringer's solution and agar, serum and serum agar, plasma, hypotonic plasma, and plasma with the addition of various glandular and other extracts As far as the effects of cold go, however, the medium appears to make very little difference, and so for the most part hypotonic plasma was used in order to make the growths uniform Homologous plasma was generally used, but occasionally heterologous plasma (e g, rabbit tissue on human plasma, &c)

The criteria of activity in these explants may be divided into two main divisions—namely, growth and function Growth is very easily observed and often exceedingly vigorous, function is much more difficult to test, in the case of the embryo and young adult heart, however, pulsation of the small explanted piece occurs with a fair degree of regularity and forms a delicate and easily observed test of functional activity For this reason the great majority of the growths used for this research were young or embryo heart tissues The staining of the surrounding medium by the excreted bile may be used as a test of activity in the liver growths although this is rather crude, and hence has only been used occasionally The functional activity of other tissues, and particularly of nerve tissues, it is almost impossible to test in these growths, and in this case the exact morphological reproduction of the tissue cells may be fairly logically taken to imply that such tissues are functionally active It may be argued that this jump from vegetative to functional activity is not justified and that the two are quite separate entities Against this is the fact that among hundreds of heart growths it has been observed that there is a close relationship between the two, the more vigorous the growth the more active the pulsation A heart growth pulsating but not growing (functionally but not vegetatively active) was not observed among the whole series

The experiments in this group may be divided up as follows —

(*a*) In which the tissue *en masse* was stored in Ringer's solution at low temperatures Portions of the tissue were then explanted and incubated

(1) Stored at temperature of + 2° C (in ice chest) for 48 hours and then cultured In practically all these cases growth rather more vigorous than that in the controls which were immediately explanted took place

Typical example —March 2nd 1916 Rabbit embryo (14 days) placed in Ringer and stored at + 2° C March 4th Portion of heart explanted into medium of rabbit plasma (No 445) March 6th Vigorous pulsation and extensive growth—transplanted March 7th: Pulsation continues fresh growth actively occurring

(2) Stored at temperature of + 2° C for 7 days and then cultured May 31st Rabbit embryo (10 days) placed in Ringer and stored at + 2° C June 6th Skin explanted into medium of hypotonic rabbit plasma (No 974) June 8th Extensive growth of fibroblastic and epithelial cells

(3) Stored at temperature of –10° C for 30 minutes and then cultured (May 13th) in hypotonic plasma (859) May 17th: No growth observed

From this series of experiments the conclusion may be drawn that tissues may be stored at a temperature of – 2° C for periods up to at least 7 days without losing any of their vitality either functional or vegetative and, indeed in some cases appear to have increased in vitality over the controls which were explanted immediately At the same time, temperatures as low as −10° C kill the tissues within 30 minutes

---

* Research conducted under a grant from the Medical Research Committee at the Pathological Laboratories, Charing Cross Hospital Medical School Thesis accepted for the degree of D Sc Lond

(*b*) Actively growing tissue in explants exposed to varying degree of cold for certain periods of time and then incubated again

(1) Stored at temperature of +2° C

March 9th: Small portion of fresh human thyroid (removed at operation) explanted into human plasma. March 10th: Some liquefaction of medium had occurred placed in ice chest for 24 hours and again incubated March 13th Fairly extensive growth of epithelial cells

(Liquefaction is common in human growths and there is usually over 24 hours latent period before growth starts)

(2) Stored at temperature of +2° C for 16 days

April 24th Rabbit embryo heart stored at +2° C in Ringer for 24 hours then explanted in hypotonic plasma. April 26th Active growth and pulsation Placed in ice chest for 16 days incubated again within 2 hours vigorous pulsation was occurring and later active new growth was noted which continued for several transplants

(3) Stored at temperature of −5° C for 30 minutes

April 24th: Rabbit embryo heart stored at +2° C in Ringer for 24 hours then explanted into hypotonic rabbit plasma April 26th: Vigorous pulsation and extensive growth kept on ice and salt at −5° C for 30 minutes Incubated again As soon as temperature reached +30° C pulsation started and growth went on in further *transplants for several generations.*

(4) Stored at temperature of −7° C for 30 minutes

May 5th Rabbit embryo heart stored at +2° C in Ringer for 24 hours then explanted into hypotonic plasma May 7th: Vigorous pulsation and active growth. Placed on ice and salt at −7° C for *30 minutes the plasma froze into an opaque solid material at this temperature* On incubating the fibrin net-work was completely broken up and the medium liquefied the new grown cells were expanded into circular form much vacuolated and rapidly broke up altogether Pulsation stopped and although the tissue was transplanted several times no further growth or pulsation occurred

This experiment repeated with temperatures down to −18° C gave the same result.

It is necessary here to interpose some further observations upon this last series of experiments We have already drawn attention to the fact that these growths, *if not transplanted*, eventually die of toxæmia from accumulation of metabolic products The onset of this condition can be readily observed In the first place, the growth becomes much slower and pulsation less active, in the second place, the newly grown cells become circular and much vacuolated In these particular experiments the controls began to exhibit this condition in about five days and transplantation became necessary It will be noted that in the chilled specimens growth had already been occurring for two days *before they* were placed in the ice chest, and upon re incubating special care was taken to look for the onset of vacuolation in the cells Contrary to expectation, this did not occur on the third day, but on the fifth or sixth day The explanation is probably that the metabolic products had diffused during the condition of suspended animation from the immediate proximity of the growth and so had become diluted The further significance of this observation will be noted later

FIG 1

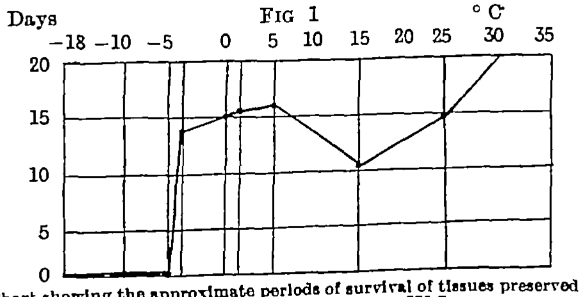

Chart showing the approximate periods of survival of tissues preserved at temperatures between −18° C and +37° C

FIG 2

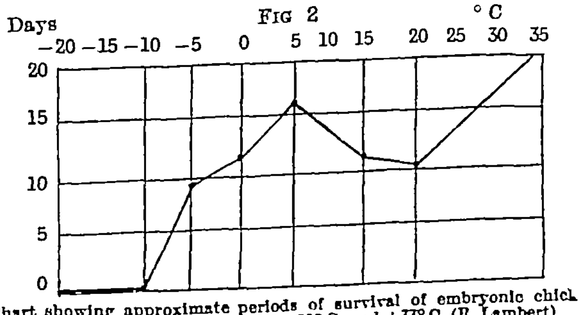

Chart showing approximate periods of survival of embryonic chick tissues at temperatures between −20° C and +33° C (R Lambert)

In this first series of experiments upon isolated tissues results were obtained which may be represented graphically (Fig 1) The curve has been charted from the general results obtained upon rabbit tissues and does not pretend to any very great accuracy Its general form is, however correct, and it agrees so closely to the curve given by R Lambert[9] for chick and rat tissues that it may be taken as approximating to accuracy (Fig 2) The main characteristics of both these curves are the sudden drop in the region of − 6° C and the dip in the curve at +14°–16° C The deductions to be drawn from these curves will appear in the last section

(2) *Effects of Cold upon the Blood*

In Da Costa's "Surgery," in the section on Frost-bite, appears the statement that definite changes occur in the blood in the nature of cellular degenerations, &c

It remains to be seen whether the changes occurring in isolated blood *in vitro* corresponded to those occurring in the other tissues of the body If the cellular contents of the blood became injured by the cold we should expect two results (1) The breaking up of the white cells would liberate tissue ferment and so bring about coagulation, (2) the red blood cells would hæmolyse

For the most part human blood was used for these experiments, as it was found to be difficult to keep rabbit's blood longer than 12 hours without coagulation occurring As far as rabbit's blood was investigated, however, it agreed entirely with the results given below for human blood It was aseptically drawn off from the superficial veins of the arm through a very large (⅛ in bore) needle evenly coated with paraffin From this it flowed into paraffined test-tubes contained in a special ice chest, the temperature of which averaged +2° C These tubes were sealed with paraffined corks

(1) Blood collected quickly in this manner and stored at +2° C can be kept between three and four days without coagulating If at the end of three days the plasma and corpuscles be mixed by shaking, and the whole centrifuged the supernatant plasma is practically unchanged in colour, a few specimens showing the slightest darkening of the straw tint which probably indicated hæmolysis Even at the end of four days coagulation at this temperature is slow and imperfect, for if the exuded fluid, which is apparently serum, be warmed to +30° C and a little tissue extract added coagulation again occurs and a fairly firm clot is formed.

(2) Three specimens of the same blood were collected in three well paraffined tubes—A, B, and C

A. Immersed in melting ice at temperature 0° C for 30 minutes then kept at +10° C for 5 minutes At the end of this time the blood was quite fluid and slight separation of plasma had occurred. Centrifuged 3½ minutes Excellent separation of perfectly clear plasma Plasma and corpuscles were again mixed and centrifuged Again there was excellent separation of clear plasma.

B Immersed in ice and salt at temperature −5° C for 30 minutes then kept at +10° C for 5 minutes. The blood remained uncoagulated and was centrifuged 3½ minutes Excellent separation of clear straw plasma Plasma and corpuscles mixed and centrifuged The supernatant plasma still remained absolutely clear

C Immersed in ice and salt temperature −9° C for 30 minutes The blood became thick and gelatinous. Upon warming to +10° C for 5 minutes the blood coagulated and on centrifuging no separation occurred The clot was well broken up and the whole again centrifuged The supernatant serum was stained very dark red so that it was difficult to distinguish any line of separation

(3) Three specimens of the same blood in three tubes D, E F, were kept at +2° C for 1½ hours At the end of this time all were uncoagulated and the blood freely mobile

D Immersed in melting ice at 0° C for 1½ hours. Partial separation of plasma occurred Centrifuged 3½ minutes Good separation of clear plasma Mixed and centrifuged again for 2 minutes Plasma again clear Warmed to coagulate and kept at room temperature 17° C for 1 hour Clot broken up and the whole again centrifuged supernatant serum absolutely clear

E Immersed in ice and salt for 1½ hours The temperature at start was −5° C and slowly rose during the immersion to −1° C Partial separation of plasma by gravity Centrifuged 3½ minutes Good separation of absolutely clear plasma. Mixed and centrifuged again plasma still clear Warmed to coagulate and kept at room temperature for 1 hour Clot broken up and the whole again centrifuged serum absolutely clear

F Immersed in ice and salt temperature −12° C rising to −7° C during course of experiments (1½ hours) Whole solid no separation of plasma by gravity Centrifuged 3½ minutes no separation the whole having clotted Clot broken up centrifuged again. Serum dark red difficult to see line of separation. Warmed and kept at room temperature for 1 hour Mixed and again centrifuged Serum so red as to be almost opaque to transmitted light

The conclusions to be drawn from this second group of experiments may be represented by the curves plotted in Figs 3 and 4 The first point of importance to be noted in regarding these curves is the close similarity between Fig 3 and Fig 1, and from it the conclusion may be drawn that the effect of cold upon the actual blood cells, both white and red, is precisely the same as its effect upon isolated tissue cells The explanation of the curve in Fig 4 is not quite so obvious It must be remembered, however, that, among other things, the presence of tissue extracts containing thrombokinase is essential for the coagulation of the blood In the case of blood kept at the body temperature the leucocytes, and perhaps the platelets are in a state of normal activity, and during their metabolism throw off products containing the necessary thrombokinase As we have already shown, the tissue and blood cells at temperatures in the region of zero are in a state of suspended animation All metabolic processes are therefore inhibited hence coagulation only occurs after prolonged periods and then very imperfectly On the other hand, as soon as temperatures below −6° C are reached there is actual physical destruction of the cells liberating the necessary thrombokinase The blood at this temperature is already frozen (solid) but as soon as the temperature rises clotting must occur This we consider is a logical explanation of the phenomena recorded in the above paragraphs and it agrees entirely with the deductions drawn from the first paragraph As a result we must regard temperatures in the region of −6° C (the exact temperature varies a little with different tissues) as being critical in nature as far as the function and activity of both tissues and blood cells go

FIG 3

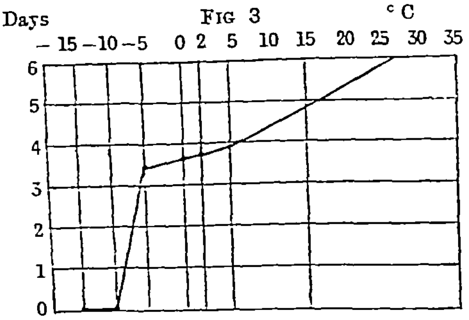

Chart showing the degree of cellular destruction in the blood at varying temperatures The dotted portion of the chart is not the result of actual experiment but is the suggested form derived by analogy from Fig 1

FIG 4

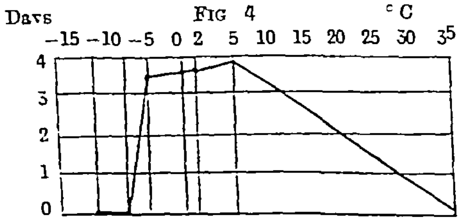

Chart showing roughly the coagulation time in relationship to varying degrees of temperature.

(3) *Investigation of the Effects of Cold upon the Tissues in Normal Relationship to the Circulatory and Nervous Systems*

In this branch a considerable amount of work has already been published. In perusing the literature the first thing that strikes one is the difficulty that all experimenters have experienced in producing any signs of frost-bite unless temperatures below the freezing point of the tissues (that is −6° C) were used In the recent experiments, already quoted by Lorrain Smith Ritchie, and Dawson after exposure of rabbit s feet to temperatures just below zero for three days on end, only the slightest reactionary swelling was produced and in order to produce anything like marked swelling it was usually necessary for these observers to apply constricting bands to the legs

In our own case the experiments were carried out upon rabbits and human skin For the latter series I have to express my deep thanks to the numerous students at Charing Cross Hospital who so readily offered themselves for these investigations

Experiments upon Rabbits

A.—Rabbit anæsthetised left ear immersed in melting ice for 10 minutes and allowed to warm at room temperature Ear slightly blue no swelling 24 hours both ears normal 48 hours both ears normal

B —Rabbit anæsthetised left ear immersed in ice and salt, temperature −3° C for 10 minutes and immediately transferred to water at + 40° C for 15 minutes Ear slightly more congested than control no swelling

C —Rabbit anæsthetised left ear immersed in ice and salt, temperature − 5° C for 3 minutes then transferred to water at + 45° C for 2 minutes This process was repeated four times in succession 1 hour slight increased vascularity of ear no swelling 24 hours, ears perfectly normal

D —Rabbit anæsthetised ear immersed in ice and salt, temperature −10° C for five minutes and then exposed to room temperature 1 hour slight swelling present 12 hours very extensive swelling some blistering

E —Rabbit anæsthetised ear immersed in ice and salt temperature − 4° C for 20 minutes then transferred to water at +39° C

Special attention was paid to the state of the vessels While chilled certain medium sized vessels apparently from their bright red colour arteries stood out very well and the whole appearance of the ear by transmitted light was a healthy pink Upon warming these vessels rapidly diminished in size and practically disappeared only to be replaced by a very large series of vessels, dark blue in colour which were obviously veins By transmitted light the ear became very blue and congested 2 hours slight congestion remained no swelling 12 hours ear absolutely normal

This series of experiments was repeated upon rabbit s feet and gave precisely similar results

Experiments upon Human Skin

F —N C L May 15th Two areas on skin of forearm were used One a small area ½ in in diameter was exposed to CO_2 snow for 35 seconds The second larger area was exposed to ice and salt temperature −5° C to −3° C in a larger container for 20 minutes In both cases the arm was transferred immediately to water at + 40° C Within 10 minutes the first area was blistered showing that the exudation had been enormous The second area was rather red but otherwise normal 12 hours blister has increased in size The second area now normal Under cover of the blister a slough formed which separated after 14 days leaving behind a well marked depressed scar

G —W J C June 5th Two areas on forearm The freezing mixture was applied in a tall glass cylinder and had to be considerably lower than the actual temperature required owing to the enormous amount of heat conveyed to the area from the underlying tissues First area Temperature of mixture −12° C to −10° C Time 12 minutes Then immersed in water at + 40° C The skin did not solidify Second area temperature of mixture −18° C to −16° C Time 12 minutes Then immersed in water at +40° C The skin solidified

In the first area, other than slight temporary hyperæmia no effects were produced In the second area there was immediate swelling of the skin and subcutaneous tissues the effects of which lasted for several days, and although the actual destruction was not enough to cause sloughing yet the overlying skin underwent atrophy and has left behind a slightly depressed smooth area

This experiment was repeated several times upon different students and always produced the same result—namely that unless the skin solidified (that is reached −6° C) no effect other than transient hyperæmia was produced but the slightest degree of solidification produced swelling

As a result then, of this third series of experiments we draw the conclusion that − 6° C is not only critical in regard to isolated tissues, but also with regard to tissues in normal relationship to the body At the same time the transient hyperæmia which invariably occurs in temperatures above −6° C must not be overlooked, for, as will be seen later, it is of the utmost importance in the elucidation of the effects of "chilling" as opposed to true frost-bite

(4) *Investigation into the Effects of Cold upon the Tissues in Abnormal Relationship to the Circulatory and Nervous Systems*

In the last three groups of experiments we have indicated that below − 6° C there is actual destruction of tissue, and so in tissues in normal relationship with the body, swelling and other signs of frost-bite were easily produced when this temperature was exceeded On the other hand, lesser degrees of cold have very little local effect upon the tissues, and correspondingly signs are very difficult to produce experimentally Smith, Ritchie, and Dawson[8] have produced swelling of the feet by standing rabbits for several days in cold mud and immersing them in hot water In other cases, however the animal was placed on dry mud at temperatures of +1° C to −1° C for over a week with only the slightest signs of swelling, especially when the warming was slow In yet other cases the temperature was kept at 0° C to − 5° C for as long as five days, and even although a constricting band was used there was no swelling when the legs were slowly warmed The greater number of their experiments were conducted with constricting bands which brings in an additional factor On the whole the impression derived from their article agrees with the writer's experience—namely, that it is difficult to produce any pathological change at temperatures above −6° C This being so it will be difficult to estimate the effect of placing the part in abnormal relationship to blood and nerves In the following series of experiments special attention was therefore paid to the condition of the vessels in those cases where temperatures above − 6° C were used, while in those below this temperature the swelling and blistering of the parts formed obvious indications As in the last group, the experiments were conducted upon rabbits' ears and legs and upon human skin

Experiments upon Rabbits

A.—All the nerves going to the left ear were blocked at the base with ½ per cent. cocaine Around the base of the opposite ear (control) a corresponding amount of Ringer's solution was injected Under general anæsthesia both ears were exposed to *freezing solution* at −20° C for 10 minutes and then immersed in water at + 40° C for a further 10 minutes The vascular changes during this experiment were exactly the same as those given in the corresponding experiment in the last group No swelling or other signs of frost-bite occurred the general congestion of both ears having passed off in 12 hours

B —The internal and external popliteal nerves (left) were blocked with 1 per cent cocaine in the popliteal space Control injection of Ringer into the right popliteal space Both immersed in freezing solution temperature − 6° C for 10 minutes The legs did not solidify transferred *to water at + 40° C* Slight transient congestion of both feet, no other swelling or other signs of frost-bite occurred

C —Injections similar to those in B Immersed in freezing solution temperature −16° C *for 10 minutes and then in water at* +40° C 2 hours later right foot slightly swollen left not swollen 12 hours later there was extensive swelling of the right foot and slight swelling of the left

D —Three minims of stovaine and glucose solution injected probably extrathecally, into the spinal column between the second and third sacral vertebræ. Right leg immersed in ice and salt at −15° C for 12 minutes and then in water at + 40° C Upon recovery from the general anæsthetic the animal was paralysed in both hind legs This passed off in the course of two to three hours 12 hours later there was extensive swelling of the right foot which lasted several days

Note —Spinal injections are difficult in rabbits owing to anatomical arrangements of the dura and cord In two other cases this experiment was attempted, but in each case a permanent paralysis of one leg occurred The animals were killed and at post-mortem examination a small area of œdematous tissue was found surrounding the cord in the region of the injection These experiments are of interest, however, in view of the fact that in *one case* despite the exposure of the feet to freezing mixture at −12° C for 10 minutes, followed by water at +40 C, no signs of frost-bite occurred. In the third case slight swelling of one foot occurred after 12 hours

E —The perivascular tissues around the femoral vessels on the left side were infiltrated at two points with 1 per cent cocaine. Both legs immersed in freezing mixture at −15° C for 10 minutes and then in water at + 40° C One hour later there was slight swelling of the right foot. In 12 hours both legs were extensively swollen the right rather more than the left.

F —Dorsum of left foot infiltrated with 1 per cent cocaine ½ c c Dorsum of right foot infiltrated with adrenalin 1 in 10 000 ½ c.c Both immersed in freezing mixture at − 15° C for 8 minutes and then in water at 40° C 1 *hour left foot slightly swollen and hot; right foot* no swelling cold 12 hours left foot extensive swelling right foot no swelling 36 hours, left foot less swollen right foot now swollen. 72 hours left foot normal again right foot extensive swelling

G —Both feet immersed in freezing mixture at − 3° C for 20 minutes, and then in water at +40° C The left leg had an elastic constricting band above the ankle While chilled the right was bright pink in colour the left cyanotic Upon warming the right foot became blue and the left very congested and cyanotic 2 hours very slight swelling of the left foot right apparently normal. 24 hours both feet normal

Human Experiments

H.—N C L. May 15th Three areas on the forearm were exposed to CO_2 snow for 30 seconds The highest was used as a control the centre was completely surrounded by a ring of novocaine and adrenalin with deeper injections into the fascia to complete the blocking" The lower area was rendered anæmic by a piece of plate glass strapped tightly on to the arm In all cases the arm was immersed in water at +40° C at the end of the experiment The control area blistered within 10 minutes and eventually left behind a depressed scar The middle area showed slight signs of congestion *After two or three days there* was slight scaling of the cornified layer There was absolutely no swelling no blistering and no scar remained The lowest area blistered even more quickly than the control and a slough having separated has left behind a depressed scar

The experiment when repeated did not give absolutely constant results This depends in all probability upon the time of exposure and the type of skin For instance, in two cases (W E P and *N S*) the upper and lower areas blistered quickly as in Experiment H The centre area raised a small and imperfect blister after two to three days delay

I —M. A. O June 10th. Two areas the first injected with 1 per cent cocaine the second with Ringer's solution. Exposed to ice and salt at *−16° C for 12 minutes Within 10 minutes* the second area showed marked swelling the first although reddened was not swollen

J —W J C June 10th. Two areas one infiltrated with adrenalin 1 in 10 000 the second with 1 per cent. cocaine in Ringer CO_2 snow then applied to each for 15 seconds. After 15 minutes there was swelling of the second area, the first although reddened was not swollen. 12 hours second area covered by a large blister first area, except for discolouration was normal 30 hours the first area had started to blister 1 week both areas showed sloughing of equal extent

The conclusions drawn from this group of experiments are that in true frost-bite produced by temperatures below −6° C there is actual tissue destruction, due directly to the cold, the effects of which *it is therefore* impossible to prevent entirely by modifying either the blood or nerve *supply to the part* In the case of chilling alone produced by temperatures above −6° C, the normal congestion of the parts is not prevented by nerve blocking, although it may be less severe, it is, however prevented *by the local injection* of adrenalin, and to some extent also by local injection of cocaine The results obtained in the case of human skin agree very closely with those obtained in the limbs of rabbits

(5) *Conclusions Drawn from these Experiments with Regard to the Pathology and Treatment of the Effects of Cold*

In the short conclusions given at the end of each group of experiments we have drawn attention to the fact that cold below − 6° C has a very different effect from cold above that temperature and have suggested that this temperature must be considered as being decidedly critical in nature Constant results were obtained in all varieties of experiments and upon all tissues Many writers would appear to suggest that the effects of cold are slowly progressive and vary concurrently with the extent of drop in the temperature The curves given above show that this theory cannot be held The sudden drop at −6° C implies that at this temperature some additional *factor* occurs, probably in the nature of a physical change which destroys absolutely the protoplasmic content of the cell The changes occurring at temperatures above this point are changes of degree and of a chemical nature, once the freezing point of the protoplasm is reached, however, fundamental changes occur in the cells of a gross physical character The gradual depression in the curve which occurs in the region of +15° C fits in entirely with the above suggestion of chemical changes, and is probably explained in the following manner

The essential vital process of any cell is summed up in the word metabolism, and this consists of a delicate balance between anabolism and catabolism In the living cells the protoplasmic molecule by means of side chains attaches to itself certain anabolic products of food assimilation This chemical (query physico-chemical) union will require the absorption of a certain amount of energy At the same time the protoplasm is *being continually broken up* (*by* the total function of the cell) and metabolic products thrown off During this process a certain amount of energy will, of course, be liberated in various forms (heat, motion, &c.). Of these two processes anabolism being of the nature of a synthesis, and *requiring external energy in the form of heat* is the more easily affected by external agencies and may be considered to be the more delicate of the two During the process of chilling of the tissues, therefore, although both will be affected, we shall expect *a priori* that anabolism will stop before catabolism At *temperatures in the region* of +15° C anabolism may be assumed to have stopped entirely, while catabolism continues slowly When temperatures in the region of zero are reached catabolism also stops, and so it follows that tissues at the temperature of 0° C can be preserved for longer periods than *those at* +15° C The question of the effect of autolytic enzymes has been purposely ignored, for their function is so bound up with the metabolism of the cell protoplasm as to be included in the above suggestions The analogy to *some of the* high explosive compounds is fairly accurate *These* compounds are notoriously unstable, if raised to the explosive temperature rapid combination with oxygen occurs and the explosion results, this corresponds to normal cell metabolism If stored at rather lower temperatures they fairly rapidly degenerate into simpler and more stable compounds When stored at low temperatures, however, they retain their potential explosive properties over considerable periods being meanwhile quite stable At the risk of repetition we again state that the effects of cold below and above − 6° C respectively can in no way *be compared*—the one is chemical, the other physical, and the difference between them is as great as that between a mixture of hydrogen and oxygen gases in a tube and the water which results from their chemical combinations From this point onwards therefore, we shall divide these considerations into the effects of true "frost-bite" and the effects of chilling of the tissues

Effects of True Frost bite

Frost-bite produces actual destruction of tissue and, as a result, the pathological effects are numerous In the minor cases the destruction of the endothelial walls of capillaries allows of a rapid exudation of the fluids and also in some cases of the cells of the blood into the surrounding tissues In some cases the endothelial and other cells, by their destruction will set free tissue *extracts and so* intravascular clotting will occur This process may extend until the larger vessels are affected and lead to complete cutting off of the blood supply followed by gangrene In other cases the actual pressure of the exuded fluids will bring about the same result In the minor cases the destroyed tissues will be absorbed slowly by a process of aseptic inflammation and leave as a result a certain amount of fibrosis and scarring In the worst cases the whole thickness of the part is affected (this takes a considerable exposure, as the deeper tissues freeze slowly) and necrosis or sloughing occurs In addition to these results, in many cases there will be microbic infection with its concurrent effects Clinically the results of frost-bite are rarely seen in our temperate climate, but in other countries they are not at all uncommon. In Canada, for instance, a large number of cases occur every year and are often of the utmost severity It is interesting to note in this connexion that in the *Journal of the Royal Naval Medical Service*[*] a case of true frost-bite is recorded as occurring during an aeroplane flight at a height of 15 000 feet, the calculated temperature at this height being 34° below zero

It now remains to be seen whether we can prevent or in any way diminish these effects. Bearing in mind the pathology of the condition as given above, we should *a priori* expect that very little could be hoped for in the way of treatment The experiments detailed in Group 4 absolutely confirm this prognostication Whether the nerves to the part were blocked with cocaine or the blood supply was temporarily cut off the results were invariably the same If the vaso-motor nerves accompanying the blood vessels were blocked by perivascular infiltration with cocaine the results were no better There is however one exceedingly important observation which must not be overlooked—namely that the local injection of cocaine or, better, of adrenalin in one or two cases entirely prevented the exudation, and in all cases caused considerable delay and probably lessened the amount This delay in some of the cases amounted to three or four days The explanation of this phenomenon rests with the vaso-motor system With regard to the effects of temperature changes upon the calibre of the vessels, too much emphasis has been laid upon the nervous reflex. The above experiments would tend to show that the central mechanism in this case is quite subsidiary to the local one. It is a well known fact that involuntary muscle fibres react to temperature changes by contracting during falls and relaxing when the temperature is raised. The involuntary muscle of the arterial walls may be expected to form no exception. It must be remembered that the circulatory system may be divided up into four main types of vessels—namely, the larger arteries, containing very little musculature, the arterioles, which are exceedingly muscular, and which, in the normal condition of arterial tone, act as a dam protecting the capillaries through which alone exudation occurs, from the arterial blood pressure, and finally the veins with little or no musculature, but capable of great distension. The first effect of cold will be to contract the musculature of the arterioles This, as proved by some of the experiments in Group 3, occurs in the presence of nerve blocking and so must be due to the direct effect of cold upon the muscle The contraction of the arterioles occurs to such an extent as completely to obliterate the vessels The capillaries and veins will therefore be comparatively empty, while the larger arteries will be distended at full pressure, hence the red appearance of the parts by transmitted light When the part becomes frost-bitten, the muscles of the arterioles are destroyed As a result upon thawing the damming effect of the arterioles upon the blood pressure is lost and the capillaries become subject to sufficiently high pressure to cause exudation If the endothelial wall is also destroyed by the cold then the exudation will be all the more rapid and extensive. Both cocaine and adrenalin cause a local contraction of the vessels by direct effect upon their walls and so the vessels just beyond the frost-bitten area will remain contracted even when thawing occurs This will prevent the blood pressure in capillaries from rising and so no exudation occurs As the effects of the local injection begin to wear off, however the capillary pressure will rise and, should the wall have been seriously damaged by the frost bite delayed exudation will now occur If on the other hand the capillary wall is now normal no exudation will occur This appears to afford a simple and logical explanation of the phenomena of late exudation and of those cases where no exudation occurs the injury in these latter cases being submaximal and the capillary walls rapidly restored to the normal condition In the severe cases therefore nothing can be done In the milder cases, however it has been pointed out that, in addition to the actual direct destruction, there are the effects produced by the exudation itself. Indeed, a vicious circle is set up, for the greater the exudation the greater the venous obstruction, and the greater the venous obstruction the greater the rise in the capillary pressure, and hence the greater the exudation Although, therefore, it will be impossible to prevent or remedy the destructive effects of the cold, it would seem reasonable to attempt to limit the exudation and so to prevent additional damage This can be accomplished by preventing any considerable rise in capillary pressure, both by damming back the arterial blood and by ensuring quick venous return The former method has been carried out in this work by the local injection of vaso-constrictors, and although this method is impracticable in the majority of human cases, treatment by the use of intravenous injections of vaso constrictors is worthy of trial The disadvantage of all the vaso constrictors is that it is difficult, and in some cases impossible, to localise their action to the desired area, and, again, in some cases the effect is very transitory and followed by a reactionary dilation which renders the condition worse By the judicious use of injections of strychnine and ergot it should be possible to keep up a fair degree of vaso constriction over the first two or three days, and particularly is this necessary during thawing In discussing this suggested treatment with colleagues, it has frequently been objected that the use of vaso-constrictors in any condition approximating to gangrene is surely not indicated This objection undoubtedly holds in the case of severe frost-bite, causing necrosis of the part, for all that can be hoped for in such cases is the formation of a line of demarcation and the separation of the dead tissue In the minor cases of true frost-bite however, we believe that many of the evil effects are due to the excessive exudation and that therefore the use of vaso-constrictors to limit the exudation is indicated We have unfortunately, not been in a position to give this treatment a trial

The Effects of Degrees of Cold Above −6° C upon the Tissues

We now pass to a consideration of the effects of cold above the critical temperature upon the tissues, this will include one of the essential factors in the production of "trench foot"

S Delépine[11] has suggested the use of the term "frigorism" to denote this condition This English equivalent of the French "froidure" although not very euphemistic is certainly an improvement upon "water-bite"

In the condition of suspended animation brought about by such temperatures it should theoretically be possible to preserve tissues indefinitely, practically this is not the case It is certain, however, that tissues may maintain their vitality for periods of from six to eight weeks in this condition At the end of the first series of experiments we drew attention to the fact that in growths which had been stored for 16 days at +2° C the onset of the signs of diminished vitality did not occur any sooner than in the controls which were kept at +37 5° C In both cases the periods averaged five to six days of incubation It would appear, therefore that during the 16 days at +2° C no degenerative change in the tissues worthy of consideration could have occurred As we should expect also no oxygen is used up in this condition, for the slides are sealed and the supply of oxygen strictly limited and equal in the chilled specimens and in the controls The bright pink colour of the chilled parts in the third and fourth groups of experiments also indicates that the absorption of oxygen at these temperatures is reduced to a minimum Theories which assume that the changes are due to ischæmia cannot be accepted for the chilled tissues need neither nutriment nor oxygen Clinically it is found that the actual time of exposure rarely exceeds three or four days and in this time, in view of the above experiments we can scarcely assume any change in the actual cells of the tissue (from cold alone) likely to bring about the extensive swelling and sometimes gangrene which occur The essential process would appear to be exudation, the other changes—gangrene paræsthesiæ &c—can be easily explained as being secondary to the exudation and dependent upon it

The paræsthesiæ appear to have attracted the attention of many authors Fearnsides divides the cases up into those showing objective changes and those with subjective changes only (paræsthesiæ) and explains the latter as a neurosis or psychical anæsthesia Most observers (Fearnsides,[12] Watson and Myers [13] Swan[14]) agree that in the cases with most swelling the hyperæsthesia was least marked The clinical experiences of the writer agree with this It is possible to account for all these phenomena by assuming an interneural or even intra neural exudation into the larger nerves Obviously a slight degree of intraneural exudation will produce more subjective symptoms than a large degree of interneural exudation The exudation rarely occurs either experimentally or clinically before the part is warmed Failing a satis factory explanation from any direct effect of cold let us examine the vaso motor conditions during the warming process At the start the arterioles are contracted practically to obliteration, and pressure in capillaries and veins is at a minimum As the temperature rises the involuntary muscle fibres, having been in a state of tonic contraction for a considerable period, become relaxed and for the time paralysed An enormous dilatation of the arterioles, therefore, occurs and the full arterial pressure is transmitted to the capillaries Whether the endothelial walls of these be damaged or no, the rise of pressure is so great as to cause the fluid contents of the blood to filter through the walls in exactly the same manner as serum passes through a porcelain filter when the pressure is sufficiently raised This exudation will contain fibrinogen, and hence the deposit of fibrin in the tissues The exudation will now press upon the veins and so the vicious circle starts In the same way any artificial obstruction to the venous return will increase the capillary pressure, and therefore the exudation This probably explains the very marked increase in swelling which the presence of a constricting band produces, either experimentally or clinically, and indicates an important line of prophylaxis This great vaso-dilation is, we believe, more local than reflex in origin, since experimentally it occurs when all the nerves going to the part are blocked with cocaine

We should expect this condition to be much more difficult to produce experimentally in animals than in man, for in animals the musculature of the arterioles is normally subject to greater changes than in man, and so is less likely to be rendered paralytic by temperature variations The difference then, between the pathology of true frost-bite and of chilling lies essentially in the nature of the local damage In the first instance the cells are killed by cold, and therefore only in mild cases can any treatment be of much avail In the second instance the damage is secondary to the excessive exudation, and this to the great rise in the capillary pressure If, therefore, the capillary pressure can be kept low while the arterioles regain their tone, then the conditions will be amenable to treatment

Although, therefore the pathology of the two conditions is different, the treatment of both rests in preventing too great rise of capillary pressure The suggestions given therefore, for the treatment of frost-bite will apply equally well to the treatment of chilling Better than treatment however, is prophylaxis Any condition likely to bring about venous congestion (constricting bands puttees, tight boots, standing too long in one position &c) must be avoided Variations in the temperature will bring about more rapid paralysis of the arterioles than constant cold, and so should as far as possible, be avoided This is difficult to accomplish in a limb the blood supply of which is considerably diminished A thin layer of dry air surrounding the limb will help immediately

S Delépine[11] has suggested the use of imperishable oiled silk bags to be worn outside the socks as a practical means of attaining this end Indeed, we believe that the bad effects of water are chiefly brought about by its acting as a good conductor of the varying degrees of cold

It should be noted here that McNeil[10] calls the condition "water bite" and considers that it is due entirely to osmosis the tissue being distended with dilute plasma It is difficult to believe that any degree of osmotic action could occur through the thick protective skin of the feet, and, indeed, the experiments of Rideal and Waller[3] already quoted show that, experimentally swelling except of the superficial layers of the skin itself, is not produced even when the exposure is prolonged "Water bite" would therefore appear to be an unsatisfactory term, as it fails to indicate the primary factor

Once the limb has become definitely "chilled" treatment should be immediately started It would appear better to keep the limb cold by the application of wet cloths until efficient treatment can be given than to allow partial warming to occur The actual treatment will consist in using any and every means of preventing too great a rise in the capillary pressure As to whether the use of vaso-constrictors as suggested above, will be of any avail remains to be seen They should obviously be given before the part is warmed and once they are acting the parts should be warmed not too slowly If, on the other hand, vaso-constrictors cannot be given, then the part must be very slowly raised to the normal temperature, for this tends to diminish the degree of vasomotor paralysis Elevation of the limb and gentle massage, by aiding the return of blood and diminishing the capillary pressure, will be of value in after treatment They will also be of great use as a means of prophylaxis

During rest periods the legs should be elevated and not allowed to dangle over the edge of the dug out The legs should meanwhile be well massaged, for during the rest period partial thawing is very apt to occur and to start off the train of events The more powerful of the vaso-constrictors should be given immediately, if at all, and followed by those having gentler and more prolonged action These must be continued for the first three or four days

Treatment on these lines has not yet been applied to actual cases of "trench foot," as the opportunity has not arisen It may well be impracticable to bring about the desired vaso-constriction We feel sure, however, that it is along these lines that a satisfactory treatment should be sought

In conclusion, it should be mentioned that at one period it was hoped that blocking of the large nerve trunks or preferably of the cord itself by spinal injections of novocaine would give good results by stopping the reflex nervous dilatation of the vessels We have shown, however, that for the rabbit at least the dilatation is mainly the result of the local mechanism, whether it be directly muscular or through a local nerve reflex matters not. In transferring the results to man, however, caution must be used, for in this case the local mechanism may play a smaller part in the production of the condition If this be so, then we may still hope for some success by spinal injection, combined with the action of vaso constrictors and certainly in at least one case (exp 4 D) in which a spinal injection was given, no swelling occurred, although the leg was rendered solid by immersion at −12° C for 10 minutes

Summary

(1) The temperature −6° C must be considered critical in relationship to the effects of cold upon the tissues

(2) Degrees of cold below this temperature produce true frost-bite and actual damage to tissues

(3) Degrees of cold above this temperature only produce effects secondarily by causing vasomotor paralysis

(4) Nerve blocking does not prevent either the effects of frost bite or of chilling

(5) The use of vaso constrictors delays the swelling in cases of true frost-bite while in cases of chilling the exudation may be entirely prevented

(6) Satisfactory treatment of trench foot must be directed towards preventing any appreciable rise in capillary pressure

(7) In the production of trench *foot cold* must be considered the essential factor, other factors being either secondary or subsidiary

(8) Treatment by the use of vaso-constrictors, either intravenously or otherwise would appear logical and worthy of trial

(9) Treatment by nerve blocking, either regional or central, is also suggested, although in all probability it cannot be expected to give good results unless used in conjunction with vaso constrictors

(10) Prophylaxis consists in using any and every means of preventing congestion of the legs, and in avoiding, as far as possible variations in the temperature

(11) The question as to whether any surgical procedure such as temporary occlusion of the arteries, would bring about the desired reduction in capillary pressure is being investigated.

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THE CHEMICAL AFFINITIES OF *VIBRIO CHOLERÆ*

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A KNOWLEDGE of the susceptibilities and resistances of micro-organisms to various chemical bodies is of great importance For by the application of this knowledge we may obtain selective media for the isolation of bacteria and specific disinfectants or even substances of curative value in disease

In an investigation of the chemical affinities of an organism two end points may be determined—namely the greatest dilution of the substance which is being tested which will destroy the organism in a definite time, and the minimum amount in a culture medium which will prevent the growth of the organism I use a special apparatus consisting of a series of clamped multiple pipettes which enables the determination of these factors to be carried out rapidly

The *Vibrio choleræ* is an excellent example of an organism which possesses peculiar chemical affinities The first substances which were tested with this organism were various acids and alkalies and the dilutions of these were prepared from standard normal solutions All the dilutions in these experiments were made with 1 per cent. peptone water

Alkaline Media

Chart I shows the relative resistance of the *Vibrio choleræ* to caustic soda It is seen that the vibrios remain alive in peptone water containing 3 5 c c of N NaOH to every 100 c c whereas the other organisms such as *B typhosus* and *B coli communis* are far less resistant

In Chart I the last columns represent the results when a quantity of normal stool is mixed with peptone water and tested in the same manner as the cultures In this particular test the cholera vibrio was slightly more resistant than any organisms present in the sample of fæces, this hardly represents the usual results which have since been obtained in other experiments because certain fæcal bacteria such as *Bacillus acidi lactici* (Huppe) have the same resistance to alkalies and spore-bearing organisms have a much greater resistance than the cholera vibrio

Chart IA. demonstrates the amount of growth which takes place in alkaline media of various strength in 48 hours Thus the vibrio is capable of flourishing in a relatively strong alkaline medium Even when 3 5 per cent of N.NaOH was present in the media the vibrios grew on the surface with pellicle formation

Charts II, III, and IV represent the actions of sodium carbonate, sodium bicarbonate, and potassium bicarbonate respectively on the *Vibrio choleræ* and other organisms

CHART III

Amount of N NaHCO₃ in 100 c.c of media	V choleræ					B coli communis				
	Hours									
	½	1	3	5	24	½	1½	3	5	24
7·5 c.c	−	−	−	+	−	−	+	+	+	−
10	−	−	+	+	−	−	+	+	+	+
15	−	−	+	+	+	+	+	+	−	−
17 5	−	+	+	−	−	+	+	−	+	+
20	+	+	+	+	+	−	+	+	+	−
25	+	−	+	−	−	+	+	−	−	−
35	+	+	−	−	+	+	+	−	−	−
50	−	+	+	+	+	+	−	−	−	−
75	−	+	−	+	−	−	−	−	−	−
100	+	+	−	+	−	−	−	−	−	−

CHART IV

Amount of N KHCO₃ in 100 c c	V choleræ					B coli communis				
	Hours									
	½	1½	3	5	24	½	1½	3	5	24
7·5 c.c.	+	+	+	+	+	+	+	+	+	−
10	+	+	−	+	+	+	+	+	+	+
15	+	+	+	−	+	+	+	−	+	+
17·5	+	+	+	+	+	+	+	+	+	+
20	+	−	+	+	+	+	+	+	−	−
25	+	+	+	−	+	−	+	+	−	−
35	+	−	+	+	+	+	−	+	−	−
50	−	−	−	+	+	+	+	−	−	−
75	+	−	+	−	−	+	−	−	−	−
100	+	−	−	−	−	−	−	−	−	−

+ = Living − = Destroyed

The *Vibrio choleræ* grew abundantly in 48 hours in media containing 7 5 per cent and 10 per cent of normal sodium bicarbonate No growth of *B coli* took place in these strengths

Calcium hydrate was the next alkaline substance which was tested the dilutions were made by saturating with calcium oxide 1 per cent peptone water which had been thoroughly boiled to expel any carbonic acid gas which might be present The strength of this saturated solution was estimated by titrating with N/10 HCl and the various

CHART I

	Amount of N.NaOH in 100 c c	V choleræ							B typhosus							B dysenteriæ							Mixture of fæcal organism							Extract of fæces.						
		Hours																																		
			1	1½	2	3	5	24	½	1	1½	2	3	5	24	½	1	1½	2	3	5	24	½	1	1½	2	3	5	24	½	1	1½	2	3	5	24
Dilutions	1 c c	+	+	+	−	+	−	−	−	−	+	+	+	−	+	+	−	−	+	+	−	+	+	+	+	+	+	−	+	+	+	+	+	−	+	+
	2	+	+	+	+	+	+	−	+	+	+	−	−	−	−	−	+	−	+	+	−	−	+	+	+	−	+	+	−	−	+	+	+	+	+	+
	2·5	+	+	+	−	+	−	+	+	−	+	−	−		−	+	+	+	−	−	−	−	+	+	+	+	+	+	−	+	+	−	+	+	+	+
	3	+	−	+	+	+	+	+	+	−	−	−	−	−		−	−	−	−	−	−		+	+	−	+	−	−	−	+	+	+	+	−	−	+
	3·5	−	+	−	+	−	−	+	−	−	−	−	−	−	−	−		−	−	−	−	−	+	+	−	−	−	−	−	−	+	+	+	+	+	−
	[illegible]	−	−	−	−	−	−	−	−	−		−	−	−	−	−	−	−	−	−	−	−	+	−	−		−	−	−	−	−	−	−	−	−	−

* This mixture comprised *B coli communis*, *B. coscoroba*, *B neapolitanus* and Nos 71 and 106 MacConkey's list + = Growth in subcultures − = No growth in subcultures

CHART IA

Amount of N.NaOH in 100 c.c.	V choleræ	B typhosus	B dysenteriæ	Mixture	Fæcal emulsion
1 c.c.	−+	+	+	++	−+
1 5	+−	+	−	+	++
2	−+	−	−	−	−+
2·5	++	−	−	−	+
3	+	−	−	−	−
3 5	−	−	−	−	−

+ = Growth
− = No growth

CHART II.

Amount of N Na₂CO₃ in 100 c c of media	Emulsion of fæces					Vibrio choleræ					Mixture of fæcal organisms					B coli communis					B typhosus					B dysenteriæ				
	Hours																													
		1	3	5	24		1½	3	5	24	½	1	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
5 c c	−	−	+	+	+	+	−	+	−	+	−	+	+	−	+	+	−	−	−	+	+	−	−	−	−	−	−	−	−	−
7·5	+	+	−	+	−	+	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
10	+	+	+	−	+	−	+	−	+	−	−	+	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−
12·5	+	+	−	+	−	−	−	−	+	−	+	+	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−
15	−	+	+	+	−	−	+	−	−	−	+	+	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	−	−	−
17·5	−	+	+	+	−	−	+	+	−	−	+	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−
20	−	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
25	+	+	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
35	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
50	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−

Spore-bearing organism + Living—i.e., growth in subcultures − = Destroyed—i.e., no growth in subcultures dilutions which were required were made from this Chart V shows the results

CHART V

Percentage of calcium oxide	*V choleræ*					*B coli communis*					*B typhosus*					*B dys enteriæ*				
	Hours																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
0 02 /	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
0 04	+	+	+	+	+	+	+	−	−	−	+	−	−	−	−	+	−	−	−	−
0·05 ,	+	−	−	−	−	+	−	−	−	−	+	−	−	−	−	+	−	−	−	−
0 06	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−

Acid Media

The resistance of the vibrio to the action of alkalies has its counterpart in its susceptibility to the action of acids

The organism is killed in half an hour in a solution of peptone water which contains 1 5 per cent of normal hydrochloric acid It is not so readily destroyed in a broth solution of this strength of acidity, and the explanation of this may be that the acid has formed acid salts to which the organism is more resistant Numerous organic acids, such as lactic, butyric, caproic, valeric, and propionic were tested and gave very similar results Charts VI and VII show the results with lactic and butyric respectively

Chart VIII shows the results when phosphoric acid (H_3PO_4) was used

Most organisms are very resistant to the acid salts *B coli communis* will flourish in a medium containing 2 per cent of the acid phosphate of soda, and it is not destroyed in 24 hours in 7 5 per cent solution of this salt The cholera vibrio is relatively as susceptible to the action of acid salts as it is to the action of acids, the results of an experiment are shown in Chart IX

CHART VI

Percentage of lactic acid	*V choleræ*					*B dysenteriæ*					*B typhosus*					*B coli communis*				
	Hours																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
0·01 per cent	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0 025	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0 5 ,	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0 075 ,	−	−	−	−	−	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
0 1	−	−	−	−	−	+	−	−	−	−	+	+	+	+	−	+	+	+	+	+
0 2 ,	−	−	−	−	−	+	−	−	−	−	+	+	−	−	−	+	+	+	+	−
0 3 ,	−	−	−	−	−	−	−	−	−	−	+	−	−	−	−	+	+	−	−	−
0 4	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−

CHART VII

Percentage of butyric acid	*V choleræ*					*B coli communis*				
	Hours									
	½	1½	3	5	24	½	1½	3	5	24
0 025 /	+	+	+	+	+	+	+	+	+	+
0 05 ,	+	+	+	+	+	+	+	+	+	+
0 075 ,	+	−	−	−	−	+	+	+	+	+
0 1	+	−	−	−	−	+	+	+	+	+
0 2 ,	−	−	−	−	−	+	+	+	+	+
0 3	−	−	−	−	−	+	+	+	+	+
0 4	−	−	−	−	−	+	+	−	−	−

CHART VIII

Percentage of H_3PO_4	*V choleræ*					*B dysenteriæ*					*B typhosus*					*B coli communis*				
	Hours																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
0·05 /	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0 1	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0 2 ,,	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
0 4	−	−	−	−	−	+	−	−	−	−	+	−	−	−	−	+	+	−	−	−
0 8	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	−	−	−

CHART IX

Percentage of $NaHPO_4$	*V choleræ*				
	Hours				
	½	1½	3	5	24
1 /	+	+	+	+	+
2 ,	+	+	+	+	+
3	+	+	+	−	−
4	+	+	−	−	−
5	+	−	−	−	−

A large number of salts were tested next, and as a general rule it may be stated that the vibrio is killed more rapidly by the action of salts than any organisms of the typho-colon group The action of calcium chloride was an exception to this, for the vibrio exhibited almost as much resistance to this body as *B coli communis* Chart X and XI show the results with sodium chloride and calcium chloride respectively

CHART X

Per centage of sodium chloride	*V choleræ*					*B coli communis*				
	Hours									
	½	1½	3	5	24	½	1½	3	5	24
7·5 /	+	+	+	+	+	+	+	+	+	+
10 ,	+	+	+	+	−	+	+	+	+	+
12 5	+	+	+	−	−	+	+	+	+	+
15	+	+	−	−	−	+	+	+	+	+
20	+	+	−	−	−	+	+	+	+	+
25	+	−	−	−	−	+	+	+	+	+
30	+	−	−	−	−	+	+	+	+	−

CHART XI

Per centage of calcium chloride	*V choleræ*					*B coli communis*				
	Hours									
	½	1½	3	5	24	½	1½	3	5	24
4 /	+	+	+	+	+	+	+	+	+	+
5	+	+	+	+	+	+	+	+	+	−
10 ,	+	+	+	−	−	+	+	+	+	−
15	+	+	+	−	−	+	+	+	+	−
20	+	+	−	−	−	+	+	+	−	−

Aniline Dyes

Many aniline dyes have very marked antiseptic properties and they are especially active on the *Vibrio choleræ*

Charts XII, XIII, XIV, XV, XVI, XVII., and XVIII show the results with fuchsin, methylene blue, methyl

CHART XII —*Fuchsin*

Strength of fuchsin solution	*V choleræ*					*B typhosus.*					*B dys enteriæ*					*B coli communis*				
	Hours																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-15 000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-10 000	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-8 000	+	+	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-6 000	+	+	−	−	−	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+
1-4 000	+	−	−	−	−	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+
1-2,000	−	−	−	−	−	+	+	+	+	+	+	−	−	−	−	+	+	+	+	+
1-1 000	−	−	−	−	−	+	+	+	+	−	−		−	−	−	+	+	+	+	+

CHART XIII
Methylene Blue

Strength of methylene blue	*V choleræ*				
	Hours				
	½	1½	3	5	24
1-2,000	+	+	+	+	+
1-800	+	+	+	−	
1-500	−	−	−	−	−

In the strength of 1-500 *B typhosus B dysenteriæ* and *B coli* were not killed in 24 hours

CHART XIV —*Methyl Violet*

Strength of methyl violet solution	*V choleræ*					*B dys enteriæ*					*B typhosus*					*B coli communis*				
	Hours																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-16,000	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-8 000	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-4 000	−	−	−	−		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-2 000	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
1-800	−	−	−	−	−	+	−	−	−	−	+	+	+	+	+	+	−	−	−	−
1-500	−	−	−	−	−	−	−	−	−	−	+	+	+	+	−	−	−	−	−	−

violet, methyl green, bismarck brown, brilliant green and crystal violet.

CHART XV.—*Methyl Green.*

Strength of methyl green solution.	*V. choleræ*					*B. dysenteriæ* Shiga.					*B. typhosus.*					*B. coli communis.*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-8000	±	–	–	–	±	–	+	–	–	+	–	±	–	+	–	±	–	+	+	–
1-4000	–	–	–	±	–	±	+	±	±	–	–	±	–	±	+	–	–	±	–	–
1-2000	–	–	–	–	–	–	+	–	–	–	±	–	–	–	–	±	±	+	+	±
1-1000	–	–	–	–	–	±	–	–	–	–	±	–	–	–	–	±	+	–	–	–
1-500	–	–	–	–	–	–	–	–	–	–	–	±	–	–	–	±	±	–	–	–

CHART XVI.—*Bismarck Brown.*

Strength of Bismarck brown solution.	*V. choleræ*					*B. dysenteriæ* Shiga.					*B. typhosus*					*B. coli communis*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-4000	–	±	–	–	–	–	–	±	±	–	–	–	–	–	–	–	–	±	±	–
1-2000	–	±	±	–	–	–	±	–	±	–	±	–	–	–	–	–	–	–	±	–
1-1000	–	–	–	–	–	–	–	–	–	–	–	±	–	–	–	–	–	–	–	±
1-500	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	±	–	–	–	±

CHART XVII.—*Brilliant Green.*

Strength of brilliant green solution.	*V. choleræ*					*B. dysenteriæ* Shiga.					*B. typhosus.*					*B. coli communis*				
	Hours.																			
	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24	½	1½	3	5	24
1-640,000	–	–	±	–	–	–	+	–	–	–	–	±	–	–	±	–	±	–	±	–
1-320,000	–	+	±	–	–	–	–	±	–	–	–	–	±	–	±	–	±	±	±	+
1-160,000	±	–	–	–	–	±	±	±	±	–	–	–	–	–	–	±	–	±	–	±
1-120,000	±	–	–	–	–	–	+	–	–	–	±	–	+	–	±	–	–	+	±	+
1-80,000	–	–	–	–	–	–	±	–	–	±	–	±	–	±	±	±	–	–	+	–
1-40,000	–	–	–	–	–	±	–	–	–	±	±	–	±	±	–	–	–	–	–	–
1-20,000	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–
1-8,000	–	–	–	–	–	–	–	–	–	–	±	+	±	±	–	–	–	–	–	–
1-4,000	–	–	–	–	–	–	–	–	–	–	±	–	–	–	±	–	–	–	–	–
1-2,000	–	–	–	–	–	–	–	–	–	–	±	+	–	+	+	–	–	–	–	–
1-1,000	–	–	–	–	–	–	–	–	–	–	+	–	–	–	±	–	–	–	–	–
1-500	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

The *Vibrio choleræ* did not grow in dilution of 1 in 1 000 000. *B. dysenteriæ* and *B. coli communis* produced opacity of the broth in 48 hours in a dilution of 1 in 80 000, and *B. typhosus* grew well in 1 in 40 000 and 1 in 80 000 in 24 hours and in 72 hours produced considerable opacity in the media in the dilution up to 1 in 4000.

CHART XVIII.—*Crystal Violet.*

Strength of crystal violet solution	*V. choleræ*					*B. coli*	*B. typhosus*	
	Hours.							
	½	1	3	5	24	24	5	24
1-1000	–	–	–	–	–	±	±	–
1-2,000	–	–	–	–	–	–	–	±
1-4,000	–	–	–	–	–	–	±	–
1-5,000	–	–	–	–	–	–	+	–
1-8,000	–	–	–	–	–	±	–	–
1-10,000	–	–	–	–	–	–	±	–
1-15,000	–	–	–	–	–	±	±	–
1-20,000	–	–	±	–	–	–	±	+
1-40,000	–	–	–	–	+	–	–	–
1-80,000	–	±	±	–	–	±	–	–

These experiments demonstrate that the cholera vibrio is more resistant to alkalies than most organisms, and that it is particularly susceptible to the action of acids and many aniline dyes. The results obtained with brilliant green are the most extraordinary of all the chemicals which I have tested up to the present date.

Isolation of the Organism.

Many alkaline media have been used for the isolation of the vibrio, and the best known of these is Dieudonné's alkaline serum agar. These media possess disadvantages, for when vibrios are scantily present in the inoculated material their growth is inhibited, and there is a tendency for the characteristic curve of the vibrio to be lost. Recently I have used media prepared with calcium oxide, and this eliminates these disadvantages.

An excellent medium for subcultures of the vibrio is prepared by saturating nutrient agar with lime, filtering, and then carbon dioxide is bubbled through the medium and most of the lime is precipitated as calcium carbonate. When this medium is filtered again it will be found alkaline to litmus, even after carbon dioxide has been passed through it for one hour. The vibrio grows very luxuriantly upon this medium.

The following, selected from a number of similar experiments, is a method of isolating this organism when it is present in high dilution.

Three litres of unboiled tap-water were placed in a flask and about 50 gm. of a normal stool and five broth cultures of certain fæcal organisms, including *B. coli communis* and *B. acidi lactici*, were added to this. Of a 24-hour-old culture of *Vibrio choleræ* 1 c.c. was diluted with 999 c.c. of tap-water and thoroughly shaken, 1 c.c. of this dilution of 1 in 1000 was diluted with 99 c.c. of tap-water; this gave a final dilution of 1 in 100,000, of which 1 c.c. was added to the flask. Calcium oxide 1·2 gm. and 30 gm. of Witte's peptone were placed in the flask. A pellicle formation appeared on the surface of the fluid in two days and this was found to consist principally of cholera vibrios from which a pure culture was obtained.

Another method of isolating the vibrio from the excreta of patients consists in placing 5 c.c. of the excreta into three test-tubes and titrating with a soda solution of known strength until these tubes contain 3·2, 3·5, and 3·75 per cent. of normal caustic soda. At the expiration of an hour, when the alkali will have destroyed many of the normal fæcal organisms, the contents of these tubes are poured into separate flasks of peptone water and in this a culture of vibrios rapidly develops.

Several points of practical significance depend upon the susceptibility to acids of the cholera vibrio.

The stools from patients suffering with cholera rapidly undergo acid fermentation, and this is due purely to the presence of a quantity of undigested food material. A favourite method of submitting a specimen for examination from a post-mortem is to allow the intestinal contents to flow into a loop of intestine which is then ligatured, removed from the body, and forwarded to the laboratory; an acid fermentation takes place in this loop of intestine even more rapidly than in a rice-water stool.

I have received specimens for examination which have possessed an acidity up to 0·395 per cent. lactic acid equivalent. In several cases these have been tested by sterilising and then inoculating with the *Vibrio choleræ*, and the organism has died out in a short time. Specimens having an acidity above 0·25 per cent. lactic acid equivalent have proved to be valueless for examination. But the organism has been isolated from intestinal and fæcal particles in a pabulum of 0·2 per cent. lactic acid equivalent by first neutralising the acidity and then breaking up all solid particles with a glass rod.

The relative amounts of acidity produced in lactose or glucose media by the cholera vibrio and the commoner fæcal organisms are shown in Chart XIX.

CHART XIX.

Acidity reckoned as lactic acid produced—	*V. choleræ*	*B. coli communis*	*B.* [illegible]	*B. acidi lactici* organisms
In 48 hours in 37° lactose media	0·090%	0·207%	0·200%	0·163%
In 10 days in 37° glucose media	0·104%	0·251%	0·207%	0·217%

Much of this acidity certainly is not due to free acids, such as lactic acid.

A number of fæcal organisms were grown for 24 hours in tubes of glucose broth. These cultures were sterilised at 70° C., and each was divided into two portions, one of which was rendered neutral to litmus, these portions were inoculated with *Vibrio choleræ*, in every case the result was the same, the tubes which were not neutralised were sterile when tested after 24 hours, whereas in those which had been neutralised there was a growth of *Vibrio choleræ* Thus the acidity produced by fæcal organisms destroys the vibrio, but the other products of these bacteria do not prevent the rapid growth of this organism

Calcium carbonate is the best antacid to prevent the destruction of the *Vibrio choleræ* in excreta, and one or two drachms of this substance should be added to stools which are forwarded for bacteriological examination

Treatment

It would appear that the administration of acids was indicated in the treatment of cholera And theoretically the administration of the lactic acid or the products of fermented milk should give excellent results

Substances which usually are taken in with the food or are produced in the intestinal tract are easily dealt with by the animal or human economy A large number of experiments were carried out on rabbits and guinea pigs in an attempt to render acid the contents of the duodenum, jejunum, and higher parts of the ileum

Quantities of diluted lactic or butyric acid or soured milk were passed into the stomachs of these animals, and they were killed at variable times, ranging from five minutes to six hours after the administration of the acid, and in every case the contents were alkaline Only in those cases in which such large quantities of acids were administered as to excoriate the mucosa were the contents of the duodenum acid, and even then this acidity did not extend to the contents of the jejunum

These experiments were repeated with dogs and it was found that the contents of the small intestine of the common pariah dog are frequently faintly acid, and this degree of acidity cannot be increased by the administration of acids

It would seem impossible for this organism to survive in the acid contents of the stomach and reach the alkaline media of the small intestines unless it were very intimately mixed with solid particles of food, such as fats, which are not penetrated by the acid of the stomach

There is circumstantial evidence that the primary intracorporeal development of the organism takes place in the alkaline pabulum of the mouth and œsophagus, this is supported by the fact that in many patients suffering with cholera a large number of the vibrios can be found in the pharynx and in the œsophagus This may explain many of the vagaries of the disease

In considering the action of brilliant green and crystal violet upon the vibrio the question at once suggests itself Is it feasible to administer these substances to patients for the purpose of destroying or inhibiting the growth of vibrio in the intestine? I have carried out many experiments to test the action of these chemicals

Brilliant green 4 c c of a 1 per cent solution, was injected subcutaneously into the abdominal wall of a guinea pig which weighed 390 gm The animal showed no signs of general ill health and was killed after 24 hours An incision was made over the site of injection and the subcutaneous tissue was stained green and was very œdematous

Two other guinea pigs were injected with 3 c c of a 1 per cent solution of brilliant green, and large sloughs formed and separated at the site of injection, and the process of healing was very tedious, but both animals were alive and well four months after the injection

Rabbits may be inoculated intravenously with 0 25 c c of 1 per cent brilliant green for each 1000 gm weight, larger doses than this usually kill the rabbits

When the drug is administered to guinea pigs by the mouth it produces inflammation of the gastric and duodenal mucosa and intense congestion of the liver It is not readily destroyed by the acid of the gastric juice, and a large portion of the dye administered passes to the small intestine

Doses of 1/5 grain can be administered to dogs without producing poisonous symptoms, and when it is administered in a bolus of suet coated with keratin, and the animal is killed two hours after the administration, the presence of the green dye can be demonstrated in the intestinal contents by neutralising them with an acid

Further animal experiments are proceeding before testing this chemical upon patients suffering from cholera

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THREE stained glass windows have been recently placed in St Andrew's Church, Redruth Cornwall, as a memorial to the late Dr Arthur Edward Permewan The entire cost was defrayed by public subscriptions

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NORMAL GUN-DEAFNESS

BY T B JOBSON, M D DUB

IT is well known that exposure to gun fire may cause deafness Oft-repeated loud noises will produce lessened acuity of hearing In previous wars it has been noticed that a small proportion of those exposed to gun fire showed signs of deafness so it occurred to me that it would be of some interest and use to find out what proportion of soldiers exposed to gun fire go deaf, to measure, as far as possible, the amount such deafness produced in a *previously healthy ear*, to ascertain whether this deafness is temporary or permanent, and to investigate the type of deafness so produced

With these objects in view I examined a large number of soldiers who were in hospital for various wounds All who did not show an interval of at least four months from date of exposure were excluded Seventy three showing this interval were examined Of these all giving a history of previous ear trouble were ruled out and also all those who showed severe nerve symptoms, fractured skull, abnormalities of nose or throat that would cause deafness or whose membranes showed signs of old otitis media or other abnormality The patients examined were Germans, and I must say they proved very intelligent subjects

To get anything like correct results with tuning fork tests the patient must concentrate on the subject and help the investigator all he can A few remarks on tuning fork testing may not be amiss here After trying forks of different wave lengths I decided to use C 2, which gives 512 double vibrations The lower forks take much longer before the sound ceases and although the lengthened period gives increased accuracy in judging the moment at which the fork is no longer heard the patient gets tired of concentrating for so long, and as the inquiry proceeds his answers get less accurate The higher forks are heard for such short periods that no accurate results could be obtained in an investigation of this kind No particular alteration of the tone limit was found, so the comparative tests were all done with the C 2 fork The men were tested by conversation as well, but the comparative results are difficult to obtain in small amounts of deafness The large majority—over 80 per cent—were quite unaware of being deaf at all This I have noticed over and over again in English soldiers, but on examination never failed to find some definite amount of deafness

The following are the details of the cases examined —Total examined, 73 Thirteen cases were excluded for the following reasons For old suppurative otitis media, 8, nasal obstruction, 1, enlarged tonsils, 2, head injury, 1, otorrhœa, 1

The conditions of the membranes in the 60 accepted cases were as follows Normal, 37, dull, 16, retracted, 3, increased mobility, 2, cerumen removed, 2

The average age was 28 Length of exposure to gun fire a few hours to several months Intervals since exposed four to six months

The type of deafness is a fairly definite one—mixed obstructive and nerve deafness In some cases hearing was normal in one ear, but in no case was hearing perfect in both The right ear was deafer than the left in the majority of cases The time of audibility of the C 2 fork at the meatus as compared with normal controls showed a reduction varying from 2 to 27 seconds the average being − 11 4 seconds for right and − 8 4 seconds for left Bone conduction showed a very similar reduction—viz, − 3 7 seconds for right and − 3 4 seconds for left.

A good many of the cases gave a history of severe or complete deafness for one or more days after exposure in a big "strafe" but almost invariably said they could now hear quite well The cases were all infantry men who would not be so close to big gun fire as the artillery On some future occasion I hope to examine some gunners and ascertain if their acquired deafness is more severe

From this investigation I fear it may be concluded that exposure to gun fire in the present war often produces rapidly a permanent deafness This normal—if I may so call it—gun deafness is of a very definite type—a mixed obstructive and nerve deafness The amount of deafness as shown by a C 2 fork is about − 10 seconds aerial conduction and − 4 seconds of bone conduction

A CASE OF TRAUMATIC RUPTURE OF THE HEART

BY G R. TURNER C B , F R C S ENG ,
TEMPORARY SURGEON-GENERAL, R.N
AND
LESLIE PEARCE GOULD D M , M CH. OXON
F R C S ENG
TEMPORARY SURGEON R.N

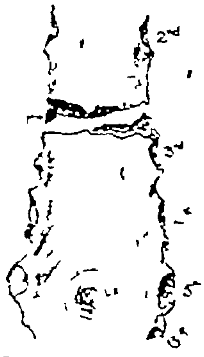
THE following case of traumatic rupture of the heart—an injury which has been reported in medical literature on only 95 occasions—appears worthy of record.

Mr G F , chief boatswain, aged 47, was leaning over the rail of his ship directing mooring operations when the rail carried away and he fell a distance of some 20 feet on to a buoy, and from there into a cutter lying alongside When picked up he was unconscious, but beyond small lacerated wounds of the chin and tongue no external injury was found He was transferred at once to the Royal Naval Hospital at Plymouth When seen on admission, an hour and a half after the accident, he was unconscious and was in a state of cerebral irritation, shouting out loudly, moving his limbs convulsively, and resenting all interference The pupils were dilated and did not react to light. There was no bleeding from nose or ears and no paralysis The extremities were pale and cold and the radial pulse was impalpable, while the heart sounds were noted to be distant and feeble There was no bruising of the chest wall, and examination revealed no sign of injury other than the small wounds of the face and mouth, and an abrasion of the scalp over the vertex, and bruising round both hips

During the next few hours his condition steadily improved, and when seen at 7 P M , five hours after admission he was conscious and rational He lay quietly in bed, and answered questions intelligently he complained of some abdominal pain, but made no other complaint His colour had improved and the extremities were now warm but the radial pulse was still impalpable, and the heart s action rapid and feeble

A few minutes later the sister on returning to the patient's room found him lying on his side, unconscious livid and breathing stertorously and within three minutes he was dead Immediately before death his eyes protruded abnormally, and his head and neck were intensely engorged and cyanosed A post-mortem examination was made the following day

FIG 1.



Posterior surface of the fractured sternum showing jagged edge A

The cranium was undamaged There was excess of cerebrospinal fluid at the base of the brain, the cerebral veins were congested and there was œdema of the brain but there was no gross injury There was a fracture of the first segment of the gladiolus of the sternum running obliquely downwards from right to left The periosteum over the anterior surface was not torn and there was no superficial ecchymosis, but the periosteum of the deeper surface was torn—evidently by the jagged edge of the fracture—and there was a small extravasation of blood into the anterior mediastinum The pericardial cavity was distended and appeared blue and on incising it 15 oz. of dark blood were evacuated After mopping this away a small tear was found in the anterior wall of the right ventricle close to the semilunar valves large enough to admit a lead pencil into the cavity of the ventricle There was a small bruise but no tear of the parietal pericardium immediately in front of this and the position of the rupture closely corresponded with the position of the left edge of the fracture of the sternum The right side of the heart was collapsed and empty The cardiac wall appeared to be healthy and of normal thickness and there was no fatty infiltration There was no other gross lesion of the thoracic or abdominal viscera and no other fracture

The diagrams (Figs 1 and 2) kindly drawn by Mr H S Holden temporary bacteriologist to the R N Hospital Plymouth show the position of the fracture and of the rupture of the heart muscle

The following facts about the case call for comment.

1 The injury was probably due to indirect violence as there was no bruise of the chest wall [illegible] that the man fell on his head, and that the fracture was caused by sudden acute flexion of the dorsal spine a mechanism which is known frequently to cause a fracture at the junction of the manubrium and gladiolus

2 It is noteworthy that the parietal pericardium was untorn permitting the sudden distension of the pericardium and death from compression of the right side of the heart.

3 The length of time that the patient lived after the accident can be explained by assuming, either that the rupture occurred at the time of the accident, and became temporarily obliterated by a clot or that the rupture did not occur until immediately before death, when a movement of the patient in bed displaced the upper fragment of the sternum backwards into the heart The first of these hypotheses seems more likely to be correct The fragments would be naturally kept in place owing to the anterior periosteum being intact and it is improbable that any voluntary movement of the patient in bed would be sufficient to drive the sternum backwards with sufficient force to rupture the heart Moreover the absence of the radial pulse and the extreme weakness and rapidity of the heart's action throughout suggest that there was an initial small hæmopericardium which became later increased by the dislodgment of a clot Corin [1] records a similar case which survived six days O'Neill [2] records the case of a boy who fell down and was stamped on He was kept in bed for two days and was then allowed up in the absence of severe symptoms remained apparently well for four days and died suddenly in bed on the following day The necropsy revealed a hæmopericardium and a slit 3 mm long at the auriculo ventricular valve In this case there was no fracture but it was indubitable that the rupture occurred at the moment of injury and became temporarily occluded.

4 In the absence of any local bruising or obvious crepitus the fracture was entirely overlooked, and the correct diagnosis was not entertained before death

FIG 2

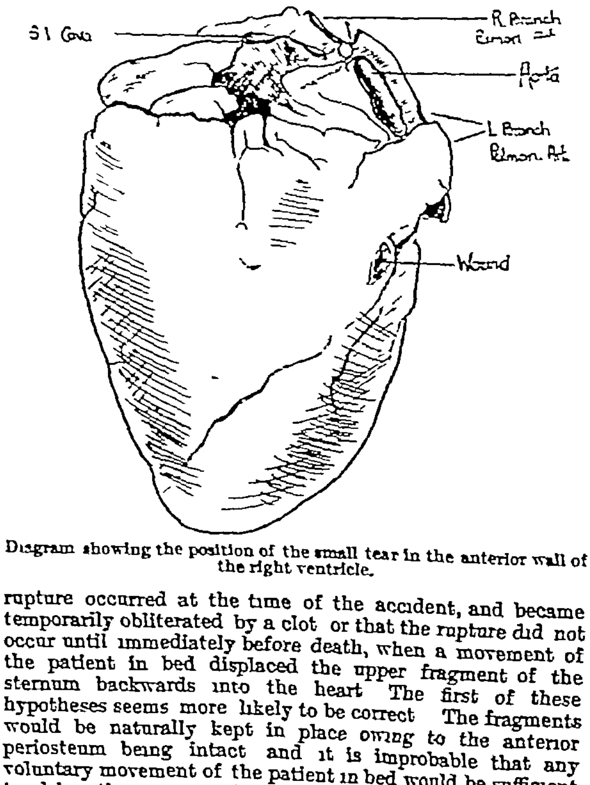


Diagram showing the position of the small tear in the anterior wall of the right ventricle.

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[1] Corin Bulletin de l Acad. Royale de Belgique 4me. serie 1911 p 552.

[2] O'Neill Journ. Amer Med. Assoc. 1914 vol. xli p 697

BRISTOL HOSPITALS AND THEIR FINANCE —The medical report read at the half yearly meeting of the governors of the Bristol General Hospital showed an increase in the number of in patients while 50 beds had been placed at the disposal of the military authorities The financial report for the past six months was satisfactory —At the meeting of the governors of the Bristol Royal Infirmary the daily average number of in patients was reported to be 457 and the out patients 30,694 The financial statement showed a deficit on the six months of £4958 making a total adverse balance of indebtedness against the institution of nearly £20 000

GASTRIC DIGESTION OF VARIOUS FOODSTUFFS AFTER GASTRO-ENTEROSTOMY

BY A. A. WOLKOFF,
AND
E E KLOPFER

A Preliminary Note from the Pathological Laboratory of the Institute of Experimental Medicine, Petrograd
(*Director*, E S LONDON)

THIS paper is but a link in the chain of investigations which are being carried out in Dr E London's laboratories, an account of which will be found in his book "The Physiology and Pathology of Digestion" (Petrograd, 1916) In the course of time more detailed statements will be made concerning the experiments which we have performed

Gastric Evacuation after Gastro enterostomy

Under ordinary circumstances the movements of the stomach are directed towards pushing the gastric contents, the chyme, through the pylorus When an artificial opening is made between the stomach and intestine the manner of evacuation is altered in accordance with circumstances In such cases the state of the pylorus is of paramount importance If it is quite closed, then the evacuation of the chyme must be effected through the anastomotic opening If, on the other hand, the pylorus is quite passable the function of the anastomosis is more doubtful, though as yet no absolutely conclusive experiments have been made on this point Existing experiments incline us to the view that when the pylorus is narrowed but is still passable the gastro-entero-anastomotic opening does not function.

No doubt the position of the anastomosis is of some importance in this connexion, doubtless its size, direction, &c play a part also When employed on such investigations the research workers of the clinic usually use the Roentgen rays and opaque meal as the means of experiment But this method cannot compare for scientific accuracy with the making of fistulæ and direct observation on the outflow The shadows of the skiagram are often indistinct, and this method can give us no information as to the chemical composition of the evacuated food. Only the fistulæ method can give an answer to all the questions which arise The following points are in need of elucidation (1) Is a joint working of both outlets—i e, pylorus and gastro entero anastomosis—possible? and, if so, (2) is the emptying of the stomach accomplished through both outlets simultaneously or at different times? (3) if the evacuation takes place at different times, does it conform to some definite law? (4) does the chyme which comes from one outlet differ from that which comes from the other when different foods, such as milk, meat, &c., are administered?

Besides the purely practical importance of such an investigation—practical in view of the increasing application of the operation of gastro-enterostomy—this research has considerable theoretical interest, for by such experiments as these we can best determine the mode of gastric evacuation The best procedure is this Various dogs with identical gastro-intestinal anastomoses are taken and their pyloruses are narrowed in various degrees With the help of a fistula distal to the pylorus and another distal to the gastro entero-anastomotic opening we are able to study the passage of foodstuffs by both parts It must be admitted that such a set of protocols are difficult to obtain, because it is very difficult to cause a certain and constant narrowing or even obliteration of the pylorus Of late the fascial ligature has been much employed [1]

Our experiments on dogs with experimental fistulæ have convinced us that the fascial ligature of the pylorus however tightly it may be applied has no power to close the outlet of the stomach entirely The ligature does not answer the purpose, even when a strong silk ligature is put over the fascial one In fact, we have no mechanical contrivance by means of which a complete and definite closure of the pylorus can be effected The activity of the emptying stomach is so strong and is effected so directly against the pylorus that a very small opening will be made use of by the stomach Clinicians often hold other views based on skiagrams, for there are cases where a year or so after the application of the fascial ligature the X ray shows evacuation of the stomach only by way of anastomosis However roentgenographical shadows may easily give inexact information In one of our dogs, which had a narrowed pylorus and a wide gastro-enterostomy, minced meat passed both ways, whilst the more compact undigested parts found their way through the anastomosis Now bismuth, which produces the skiagraphic shadows is evacuated through the gastro-enterostomy as an indissoluble part of the gastric contents It does not pass at all through the pylorus, and if it does then in a greatly diluted state so that the shadows of the food which has gone through the pylorus are either invisible or very indistinct Under such conditions the X ray fails to give an accurate rendering of the manner of gastric evacuation

Results of Experimental Investigation.

The following remarks concern a dog which had been subjected to three successive operations —

TABLE I —*Dog, "Biell a," on which the following Operations have been Performed Gastro-enterostomy Antecolica with Braun's Entero-entero-anastomosis, Ligature of the Pylorus, Formations of Fistulæ on the Duodenum and Jejunum 200 gm of Minced Meat have been given*

No of experiment and date	How long after feeding the chyme was obtained		The duration of obtaining the chyme		The quantity of chyme in c.c	Analysis of the separated portions of chyme in grammes.				
						Nitrogen			Sugar	Fat.
						Non coagulable	Coagulable	Total		
1914	h	m	h	m						
1 20/1	0	5	2	0	90	0 44	0·88 = 61	1 32	—	—
2. 24/1	2	23	1	0	35	0·25	0·38 = 62	0·63	—	—
3 7/2	3	12	1	0	43	0·63	0·70 = 52	1 33	—	—
5 11/3	0	8	0	55	50	0 34	0 35 = 51	0·69	—	—
10 14/3	0	5	2	0	55	0 33	Material collected but not yet examined			
11 19/3	0	20	2	0	60	0 33				
17 1/5	0	1	1	13	15	0 15				

TABLE II —*The Same Dog 200 c c of Milk have been given*

4 12/2	1	0	1	0	210	0 31	0·09 = 22	0 40	4·85	—
6 25/2	1	0	1	30	110	0·10	0·02 = 17	0·12	1 16	—
7 28/2	1	5	1	15	85	0·09	0·03 = 25	0·12	0·80	—
12. 23/3	1	0	1	0	130	0·06?	0·23	0·29	1 64	—
15 19/4	1	27	1	0	50	0 11	0·12 = 52	0·23	0·53	—
21 22/5	1	0	1	0	45	0 09	0 14 = 61	0·23	1·25	—

TABLE III —*The Same Dog 50 gm of Beef fat or 200 gm of Cream, or 90–93–100 gm of Table Butter Stained with Scharlach Red have been Administered*

14 15/4	1	0	2	0	38	—	0·08	—	—	0·19
25 6/6			1	0	60	0·07	—	—	1·296	—
26 12/6			2	30	74	—	—	—	—	7·57
27 16/6			2	0	85	—	—	—	—	—
28 19/6			2	0	49	—	—	—	—	—

TABLE IV —*The Same Dog 100 gm of White Bread and 100 c c of Milk have been given*

8. 4/3	1	0	1	30	15	0 53	0·56	1·09	1 18	—
9 7/3	1	35	1	24	115	0 16	—	—	5·85	—

TABLE V —*The Dog Moska,' operated in the same way as Dog Bielka 200 gm of Minced Meat have been given*

18 3/5	1	0	0	55	12	0·38	—	—	—	—
24 29/5			1	0	6 5	—	—	0·09	—	—
29 23/6			2	0	25	—	—	—	—	—

A duodenal fistula was made on Oct 23rd 1913 When this wound was healed the pylorus was closed with a thick ligature, over which a piece of fascia taken from the dog's own thigh was tied and sewn This fascial band was peritonealised and an anastomosis was made between the pyloric portion of the stomach and the first loop of the jejunum (gastro-enterostomy antecolica) Below this a Braun's anastomosis was made between duodenum and jejunum to prevent a vicious circle Onwards from the fourth day after the operation the dog was put into a stand and there received either milk (100 150, 200 c c) or meat (200 gm) or bread (200, 150 gm) At first only duodenal juices, a brownish yellow transparent fluid of alkaline reaction, escaped from the duodenal fistula No food came away, the pyloric ligature evidently was successful But on the seventeenth day after operation acid drops and streamlets of gastric origin appeared mingled with the duodenal secretion On switching on the light in the vault of the cannula these acid secretions could plainly be seen coming from the oral side The secretions were collected and analysed After the seventeenth day the analysis proved that when milk was given to the dog the fluid collected from the duodenum contained sugar The sugar estimation was performed by Bertrand's method of analysis We came to the conclusion that the sugar was probably lactose When meat was fed to the dog the duodenal juice showed very clearly the biuret reaction As the pylorus was certainly now open again in spite of our ligature, it was necessary to find out whether the gastro-enterostomy was still working It could be surmised, *a priori*, that once the pylorus had opened its functional activity would increase in the course of time, whilst most probably the activity of the gastro-enterostomy would decrease in proportion Clinicians are of the opinion that the anastomosis would in this case become closed To clear up these questions we resolved to make a second fistula (a jejunostomy) below the entero-anastomosis If during the emptying of the stomach the duodenal fistula is kept wide open only such food as has escaped through the gastro-jejunostomy will be found in the jejunal fistula The jejunostomy was accordingly performed and it was found that the food left the stomach by both parts—the old natural way by the pylorus and also by the gastro-jejunostomy Our investigations showed, however, a difference in the character of the food which escaped by the two orifices, for the more liquid parts (milk beef juice) passed through the pylorus, whilst the more solid constituents (such as minced beef) came from the jejunal fistula

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[1] R Kornieff and W Shaak The Ligature of the Pylorus and the Exclusion of the Pyloric Part of the Stomach by means of Strips of Freely transplanted Fascia. Reports of the Thirteenth Congress of Russian Surgeons Petrograd 1913, p 188.

The work at this point was interrupted by the war, but will be resumed as soon as possible In the course of time more detailed statements will be made concerning the experiments which we have performed, as well as an account given of our further researches on the points enumerated above.

In conclusion, it is a pleasant duty to express our thanks to Dr E S London for the suggestion contained in this thesis as well as for his constant direction during the execution of this work.

A CASE OF COMPOUND FRACTURE OF THE PATELLA TREATED BY WIRING

COMPLETE FUNCTIONAL RECOVERY

BY J B HANCE, M B, B C CAMB, M R.C S ENG, L R C P LOND

CAPTAIN INDIAN MEDICAL SERVICE.

THE following account of an unusual case is given in the hope that it may prove of interest

G K, a Mahommedan, aged 20, was admitted to the Cantonment General Hospital, Agra under my care, on Nov 4th, 1916, at 3 A.M, for "wound of knee" The history was that on the previous night he had taken part in a Moharram procession and was indulging in the display of sword play customary on these occasions The sword hilt turned in his hand and the edge of the weapon struck the upper part of his left knee, the leg immediately gave way under him completely and he fell to the ground On admission the wound was at once thoroughly washed with antiseptic lotion by the subassistant surgeon in charge, the wound dressed, and the limb put on a back-splint

I saw the patient late on the same day, and, on examination confirmed the diagnosis of compound fracture of the left patella but it was then too late, with the limited lighting facilities, to attempt any operative measures Treatment was confined to the injection of 1500 units of antitetanic serum

Those readers of THE LANCET who are familiar with the resources of the average Cantonment Hospital in India, both as regards the possibility of aseptic surgery and skilled assistance will appreciate my difficulty in deciding on the line of treatment However I reflected that I might as well try wiring since ankylosis was almost certain to occur if the limb escaped amputation, a result which might be improved by wiring and could not very well be made worse Accordingly on Nov 5th the patient was anæsthetised and a thorough examination of the wound was made to gauge the chance of successful wiring

With the leg in the extended position on the splint the wound a wide obtuse angle lay with the apex of the obtuse angle just above what would have been in a normal limb the mid patellar point extending internally half an inch beyond the internal patellar margin while externally it reached a point one inch beyond the outer margin of that bone On opening up the wound to inspect the fragments it was seen that the sword must have impinged on the upper border of the bone for the whole of the anterior compact layer and the lower third of the entire bone formed the lower fragment while the upper was formed by the upper two-thirds of the articular surface, with the central cancellous tissue This curious solution of continuity is roughly shown in the accompanying figure The sword must have struck the knee when the latter was partially flexed, caught the patella on its upper edge, and cut cleanly down the upper two-thirds and broken off the lower third

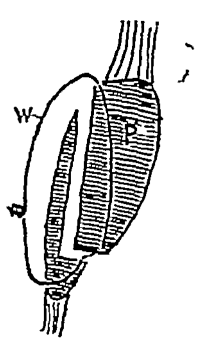

Diagram of fracture of patella (P) seen in longitudinal section The thick line shows the position of silver wire (W) in the fragments.

It appeared to me that the shape of the fragments admitted a reasonable hope of successful wiring, and that if one could prevent or control suppuration there was hope of the patient being left with a leg which if not functionally perfect, would at least be of more use to him than an amputation stump Accordingly the ordinary horse-shoe incision was made, joining up with the outer end of the wound externally, but half an inch internal to its inner end on the inside of the knee The resulting flap was turned down and the fragments exposed The joint was then cleared of blood clot and washed out with 1 in 2000 perchloride of mercury, followed by thorough irrigation with normal saline. The fragments were then drilled in the position and direction shown by the line in the figure, a stout silver wire passed, and the fragments securely fastened together The cut capsule of the joint was united by interrupted catgut sutures, as was the periosteum over the anterior surface of the patella, a rubber drainage tube being inserted into the joint cavity, externally and internally The remainder of the operation wound was closed by interrupted salmon gut stitches The edges of the sword wound were then pared with scissors, and united also by interrupted salmon gut sutures Dressings were applied and a back splint, and the patient was returned to bed. As soon as he came round from the anæsthetic weight and pulley extension was applied to the leg

On the next day the patient's temperature was 101° F, and my hopes for a good result fell almost to zero, but on changing the tubes I was relieved to find that, while there was plentiful discharge of serum and synovial fluid, nothing like pus could be noticed on the gauze or irrigated out of the joint The latter was thoroughly washed through with a hypertonic mixture of sodium citrate and saline, the tubes replaced, dressing reapplied, and the patient returned to bed A notable feature of the dressing, not only on this first day, but throughout the case, was its freedom from pain, the patient who was very nervous, assuring me after each sitting that he had not been once seriously hurt

The above procedure of dressing was repeated twice daily till Nov 22nd, when the evening temperature, after a steady decline, reached normal, the discharge remaining serous From this date it was performed daily till the wound healed Tubes were removed on Dec 4th and replaced by gauze drains, which in turn were rapidly replaced by drains formed of silkworm gut On Dec 23rd the sinuses had completely healed and massage was started

On Jan 5th 1917 the patient was discharged, at his own request, to attend as an out-patient for massage and I saw him for the last time on the day before I left Agra on service Jan. 17th when he was able to walk well with a stick and could bend his knee to less than a right angle without pain My successor Major H T Stack, R.A.M C, has kindly kept track of the case for me, and to him I am indebted for the information that when seen on March 11th this patient could walk and run, and that on May 13th he was able to squat native-fashion on his heels, and sit cross legged all day at his work boot-making This has been the test of cure that I set myself for if a man can squat and sit cross legged there cannot be much wrong with his knee joint, and I am informed that there is no appreciable functional or visible difference between the two lower limbs

Throughout the operation and the subsequent dressings, as far as local conditions permitted the strictest aseptic precautions were maintained The wound was handled as little as possible with the instruments available and no instrument touched the wound a second time that had not meanwhile been re sterilised I consider that the patient owes the fact that he has a perfectly useful knee to this procedure to the undoubted resistance possessed by the native of India to infection which would kill a European and above all to the unremitting care and attention of Civil Subassistant Surgeon Hamid Hasan Khan The latter throughout the entire case performed the combined duties of house surgeon, dresser, and nurse with an energy and attention that never flagged.

Kerman Persia.

THE SURGING GALVANIC CURRENT IN THE TREATMENT OF PARALYSIS

A SIMPLE METHOD OF LOCALISING CONTRACTION TO PARALYSED MUSCLES

BY E P CUMBERBATCH, M A., B M OXON , M R C P,

MEDICAL OFFICER IN CHARGE OF THE ELECTRICAL DEPARTMENTS OF ST BARTHOLOMEW'S HOSPITAL, THE MILLER HOSPITAL, AND THE FIRST LONDON GENERAL HOSPITAL.

IN the electrical treatment of paralysis it is necessary to prevent any stretching of the paralysed muscles And in the opinion of many it is essential that the paralysed muscles should be made to contract and relax during the treatment The various electric currents, if applied in the customary ways by means of electrodes placed on the limb or in water immersing the limb will cause contraction of the healthy muscles whatever the condition of the paralysed muscles may be. Such contraction usually overpowers the latter and stretches them When the paralysis is caused by nerve injury and the muscles show reaction of degeneration, the faradic and sinusoidal currents will not cause any contraction of the muscles supplied by the injured nerve On the other hand, the antagonists, if healthy, will contract and cause passive stretching of the paralysed group The galvanic current will, at make, cause a slow contraction of the muscles showing R D , but such contraction is accompanied by a brisk twitch of the healthy antagonists The paralysed muscles will therefore be stretched before each contraction, because their latent period is longer than that of healthy muscles

If the galvanic current is applied, not with *sudden* rise to full strength and equally abrupt fall to zero as in the customary way, but with a more *gradual* increase of strength to maximum and equally slow fall to zero and if at the same time it is made to flow longitudinally through the muscles along the direction of the fibres, contraction will then be produced only in the paralysed muscles with R D , not in the healthy muscles A galvanic current that is made to surge in this way will therefore cause contraction of the paralysed group and stretching of the healthy antagonists An additional advantage attending the use of the surging galvanic current is that the limbs requiring treatment can, in many cases, be immersed in warm water without any support other than that afforded by the bottom of the receptacle in which the limb rests By immersion in water the maximum strength of current can be borne with the minimum discomfort and, further, the other tissues of the limb receive stimulation and an increased supply of blood both of which, in the opinion of the author, play an important part in the electrical treatment of paralysis Any stimulation of the normal antagonist muscles of the limb is an advantage, provided that it does not cause them to contract sufficiently to overpower and stretch the paralysed group because the former are deprived of much of their exercise when they receive no opposition and at the same time cannot shorten owing to fixation of the joint by splints in the intervals between treatment

Apparatus for the production of the surging galvanic current —Some device that will allow quick or slow increase and decrease of the current in either direction is required Further, if the current is derived from the main a rheostat and resistance lamps are necessary The water rheostats in use in the electrical department at the First London General Hospital and St Bartholomew's serve the second requirement admirably They allow the finest and most perfect gradation of the current and they cost very little To produce the surging the same water rheostats can be used but some modification is necessary for the most effective work The apparatus known as the "Galvanoset" made by the Medical Supply Association can be used for the purpose but the milliampèremeter attached to it is not really necessary and adds considerably to its cost. The writer has devised a simpler form of water rheostat which serves both requirements satisfactorily It is being made by the Medical Supply Association The principle of the water rheostat (which was originally introduced from France) may be briefly described

A cylindrical glass or china vessel is filled with tap water inches in diameter and 4 inches in depth is a suitable size Two carbon rods, 6 inches long, are placed vertically in the water at opposite ends (say one at north and the other at south) The current from the main is made to traverse the water from one carbon to the other The current to the patient is led off from the water by means of two other carbons, which also dip vertically into the water at the circumference, one at west, the other at east In this position no current flows to the patient But if the two latter carbons are moved around the circumference, one from west to south, the other from east to north, a current will pass to the patient, its strength gradually increasing the further the carbons are moved around the circumference If the carbons are moved in the opposite direction—viz , one from west to north, the other from east to south—the direction of the current to the patient will now be reversed The advantages of this form of rheostat are the perfectly even gradation of strength of the current, the ease with which it can be reversed, the safety to the patient, and its simplicity The movement of the carbons is easily effected by means of their attachment to a bar that rotates horizontally above the glass bowl, with its centre corresponding to the vertical axis of the latter The rotation is best effected by hand by means of a small milled-edge disc attached to the centre of the horizontal bar This method is adopted in the new model of rheostat devised by the writer By rotating the disc between the fingers and thumb the current passing to the patient can be made to increase and decrease, rapidly or slowly as desired, and in either direction

Application of the current to the body —To apply the current to the limbs say the upper extremities, the forearms are immersed in the arm receptacles of the Schnee bath, each forearm in a separate receptacle The electrodes are placed in the water at the ends occupied by the fingers (not at the ends occupied by the elbows) so as to ensure the passage of the current longitudinally through the muscles If the lower limbs require treatment the legs are immersed in the appropriate receptacles The electrodes however, should take the form of metal discs with vertical rods attached to them The discs rest on the bottom of the receptacles and the vertical metal rods are covered by rubber tubing where they are in contact with the water Such an arrangement ensures the longitudinal flow of the current through the legs With the ordinary electrodes the current may pass out of the legs to the electrodes in a transverse or oblique direction The current is now made to surge between zero and the maximum desired If the muscles are healthy they will not contract whether the surging is quick or slow If the current is made to reach a great intensity—i.e , as strong as can be tolerated —some slight degree of contraction of the muscles may be noted This is more often the case when the galvanic current supplied *to* the rheostat is not perfectly even and steady When this current is derived from a motor transformer (as is usually the case when the current from the main is alternating) this unevenness is frequently observed It does not seem to materially affect the action of the surging current when any of the muscles of the limbs are paralysed and show R D Suppose that this is the case with the extensors of the wrist It will then be found that as the current increases in strength, these muscles will contract and raise the wrist and hand. As the current falls to zero the muscles again relax It is sometimes found that the best contraction of the paralysed muscles is produced when the surging current *descends* the limb—that is flows from shoulder to hand Sometimes the best contraction is seen when it flows in the opposite direction—i e , when it *ascends*

In one case it was noted that the paralysed group contracted first and that as the current was further increased the healthy antagonists contracted and overpowered the paralysed group It is therefore advisable when beginning the treatment, to grasp the immersed wrist or ankle and note which current produces the best contraction of the paralysed muscles Sometimes a quick rise from zero to maximum is required as quick as can be effected by hand Usually a much slower rise produces the necessary contraction

In some cases the muscles with R D have greatly diminished excitability A surging galvanic current that reaches a strength sufficient to cause contraction of these will usually cause a stronger contraction of the antagonists so that the former are overpowered and stretched In these cases it is necessary to localise the current to the paralysed muscles This can be done by removing the limb from the water and applying an electrode so as to cover the affected muscles and causing the current to surge as before It may even be necessary to localise the electrode to the peripheral end of the muscle so as to ensure the passage of the current in a longitudinal direction through the muscle In one case of injury of the external popliteal nerve and paralysis of all the muscles supplied, with R D, it was noted that when the leg was immersed the surging galvanic current caused contraction of the anterior tibial groups of muscles and raising of the foot The peronei which had a lower degree of excitability, did not contract until an electrode was placed over the lower half of the peronei When the electrode covered the peronei *completely* it was noted that they did not contract, and when the current was further strengthened it spread to the anterior tibial muscles and caused contraction of this group

The contraction produced by the surging galvanic current is quite different from the brisk twitch that follows a single excitation of a normal muscle It is not a tetanus like that produced by rapidly repeated excitation of a normal muscle And it is not like the sluggish contraction *and relaxation* following excitation of a muscle with R D by the make of a galvanic current It however, resembles the continuous contraction (the so-called "galvano-tonus") which is so often seen in muscles with R D during the period of flow of the galvanic current, especially during the earlier stages of the paralysis This "galvano tonic" contraction bears a closer superficial resemblance to the voluntary contraction than that produced by other artificial methods 'Galvano tonus" can sometimes be produced in normal muscles when the current is strong

The writer does not wish to make any statement regarding the relative value of the surging galvanic current and the others commonly used The study of a large number of cases over a long period of time is necessary before any conclusion can be reached The surging galvanic current can, however localise contraction to the paralysed muscles, in two cases only, so far has the writer found it to fail In these the paralysed muscles had lost their excitability to faradic, galvanic and sinusoidal currents applied with the maximum strength that could be tolerated by the patient The method described has an additional advantage in that in a large proportion of cases, especially those that are fairly recent the limbs can be immersed in water without the labour of applying electrodes or fixing supports to them

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

◆

CASE OF RUPTURED UTERUS WITH UNRUPTURED MEMBRANES

By HILDA SHUFFLEBOTHAM M.B, CH B BIRM,

HOUSE SURGEON WOMEN S HOSPITAL, BIRMINGHAM

With Note by S LEWIS GRAHAM, M S Lond, F R C S Eng

THE following case is of interest on account, amongst other things of its supposed rarity

Mrs A, aged 42, was admitted to the Women's Hospital Birmingham on Sept 8th, 1917, as an emergency case The history was that her general health had been very good until the last three years during which time she had suffered from chronic bronchitis She had had 15 pregnancies in 20 years 13 being full term All previous labours were normal and on admission she was at the full term of her fifteenth pregnancy On the day before admission she was doing her ordinary housework until 6 P M, when she commenced to have cramp like indefinite pains in the abdomen There was no vaginal loss and the patient did not think she was in labour The pains continued all night and at 6 o clock next morning she sent for a midwife who examined her and said she was not in labour but that she must call in a doctor At this time she had a sharp loss of bright red blood A local doctor came later in the morning and sent the patient into hospital Until admission at 2 P M the pains had gradually become more severe and the patient fel very ill Fœtal movements had been felt until the day before admission The condition on admission was as follows The patient was very fat and bronchitic She looked ill and was collapsed Temperature 98° F, pulse 130 and weak, breathing laboured and quicker than normal The abdomen was the size of full term pregnancy, it was painful and tender all over. Fœtal parts could not be made out definitely (The abdominal wall was fat, and the placenta lay in front of the fœtus) By the vagina there was some dark blood, the os felt thick, it was not on the stretch, and was about the size of a four shilling piece The fœtal head was felt indistinctly a long way up

An operation was performed by Mr Lewis Graham On opening the abdomen the maternal surface of the placenta presented immediately under the incision The membranes were intact and contained the fœtus cord, and liquor amnii There was dark blood clot in the abdominal cavity and the uterus was contracted down to the size of a coco-nut It had a rupture along its upper border and was quite empty The membranes were ruptured and the dead fœtus removed, which showed early maceration The placenta and membranes were then removed and a subtotal hysterectomy performed Blood clot and liquor amnii were mopped out, and the abdomen was closed with a drain to the bottom of Douglas's pouch

Pathological specimen The uterus was quite contracted down, and in this condition the rent was 6 in long At the site of rupture the wall showed marked degeneration, and at its edge was no thicker than a sheet of paper

The progress of the case was as follows The abdominal condition was perfect The patient had a sharp attack of pneumonia on Sept 19th

Note by Mr LEWIS GRAHAM

This is the third case I have had of rupture of the uterus with unruptured membranes and a dilated os In two the rupture was complete and the fœtus and its appendages have been free in the abdominal cavity In the third case the uterus had not quite ruptured through its whole thickness In each case the patient has had a large number of pregnancies in rapid succession This would appear to cause the uterine wall to give way under the tension exerted through the liquor amnii by the uterine contractions, but which tension is so slight as not to be able to cause rupture of the unsupported membranes at the external os In the case here reported it would be most interesting to know exactly when the uterus ruptured and expelled the fœtus into the abdominal cavity

A CASE OF ADENO CARCINOMA OF THE APPENDIX

BY JOHN A. C MACEWEN, M B, C M, B SC GLASG,

ACTING SURGEON GLASGOW ROYAL INFIRMARY CAPTAIN R.A.M C (T)
NO 4 SCOTTISH GENERAL HOSPITAL CONSULTING SURGEON
TO H R.H PRINCESS LOUISE SCOTTISH HOSPITAL FOR
THE LIMBLESS ERSKINE, ETC

THE patient, a man aged 43 was admitted to the Glasgow Royal Infirmary under my care on May 24th, suffering from symptoms of acute appendicitis He had been in good health until a week previous to admission, when he had severe pain in the right side of the abdomen, accompanied by sickness, vomiting, and giddiness The pain gradually disappeared, but owing to a slight swelling on the right side, which persisted, he was sent into hospital

On admission the patient had no pain, but there was a distinct tumour on the right side on the level of the umbilicus Temperature 99 2° F, pulse 112, respirations 28 An immediate operation was performed, and the tumour was *found to consist of matted omentum*, in the midst of which lay what was at first taken for a loop of much inflamed and thickened small bowel On investigation, however, the bowel" was seen to be greatly thickened appendix, the removal of which presented no special features of interest There was a considerable amount of purulent matter in the region of the mass, necessitating packing Patient made an uneventful recovery

Examination of the appendix after removal revealed a spherical white tumour, the size of a large marble, located in the *proximal end, involving* the greater part of the periphery of the wall of the appendix, and markedly blocking the lumen The appendix beyond the tumour was much thicker than normal, and the lumen much distended A microscopical examination of the tumour showed it to be of the nature of a papillomatous growth, with considerable inflammatory infiltration, while the deeper parts of the growth were adeno carcinomatous The tumour was almost confined to the mucous coat of the appendix

Glasgow

Mr Samuel Craddock, M R C S L S A of Bath, this month completes 50 years' service as coroner for North Somerset

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Apparatus for the production of the surging galvanic current —Some device that will allow quick or slow increase and decrease of the current in either direction is required Further, if the current is derived from the main a rheostat and resistance lamps are necessary The water rheostats in use in the electrical department at the First London General Hospital and St Bartholomew's serve the second requirement admirably They allow the finest and most perfect gradation of the current and they cost very little To produce the surging the same water rheostats can be used but some modification is necessary for the most effective work The apparatus known as the "Galvanoset" made by the Medical Supply Association, can be used for the purpose but the milliampèremeter attached to it is not really necessary and adds considerably to its cost The writer has devised a simpler form of water rheostat which serves both requirements satisfactorily It is being made by the Medical Supply Association The principle of the water rheostat (which was originally introduced from France) may be briefly described

A cylindrical glass or china vessel is filled with tap water, inches in diameter and 4 inches in depth is a suitable size Two carbon rods, 6 inches long, are placed vertically in the water at opposite ends (say one at north and the other at south) The current from the main is made to traverse the water from one carbon to the other The current to the patient is led off from the water by means of two other carbons, which also dip vertically into the water at the circumference, one at west, the other at east In this position no current flows to the patient But if the two latter carbons are moved around the circumference, one from west to south, the other from east to north, a current will pass to the patient, its strength gradually increasing the further the carbons are moved around the circumference If the carbons are moved in the opposite direction—viz , one from west to north, *the other from east to south—the direction of the* current to the patient will now be reversed The advantages of this form of rheostat are the perfectly even gradation of strength of the current, the ease with which it can be reversed, the safety to the patient, and its simplicity The movement of the carbons is easily effected by means of their attachment to a bar that rotates horizontally above the glass bowl, with its centre corresponding to the vertical axis of the latter The rotation is best effected by hand by means of a small milled-edge disc attached to the centre of the horizontal bar This method is adopted in the new model of rheostat devised by the writer By rotating the disc between the fingers and thumb the current passing to the patient can be made to increase and decrease, rapidly or slowly as desired, and in either direction

Application of the current to the body —To apply the current to the limbs, say the upper extremities the fore arms are immersed in the arm receptacles of the Schnee bath, each forearm in a separate receptacle The electrodes are placed in the water at the ends occupied by the fingers (not at the ends occupied by the elbows) so as to ensure the passage of the current longitudinally through the muscles If the lower limbs require treatment the legs are immersed in the appropriate receptacles. The electrodes however, should take the form of metal discs with vertical rods attached to them The discs rest on the bottom of the receptacles and the vertical metal rods are covered by rubber tubing where they are in contact with the water Such an arrangement ensures the longitudinal flow of the current through the legs. With the ordinary electrodes the current may pass out of the legs to the electrodes in a transverse or oblique direction The current is now made to surge between zero and the maximum desired If the muscles are healthy they will not contract whether the surging is quick or slow If the current is made to reach a great intensity—i e , as strong as can be tolerated —some slight degree of contraction of the muscles may be noted This is more often the case when the galvanic current supplied *to* the rheostat is not perfectly even and steady When this current is derived from a motor transformer (as is usually the case when the current from the main is alternating) this unevenness is frequently observed It does not seem to materially affect the action of the surging current when any of the muscles of the limbs are paralysed and show R D Suppose that this is the case with the extensors of the wrist It will then be found that as the current increases in strength, these muscles will contract and raise the wrist and hand As the current falls to zero the muscles again relax It is sometimes found that the best contraction of the paralysed muscles is produced when the surging current *descends* the limb—that is, flows from shoulder to hand Sometimes the best contraction is seen when it flows in the opposite direction—i e , when it *ascends*

In one case it was noted that the paralysed group contracted first and that as the current was further increased the healthy antagonists contracted and overpowered the paralysed group It is therefore advisable, when beginning the treatment, to grasp the immersed wrist or ankle and note which current produces the best contraction of the paralysed muscles Sometimes a quick rise from zero to maximum is required, as quick as can be effected by hand Usually a much slower rise produces the necessary contraction

In some cases the muscles with R D have greatly diminished excitability A surging galvanic current that reaches a strength sufficient to cause contraction of these will usually cause a stronger contraction of the antagonists so that the former are overpowered and stretched In these cases it is necessary to localise the current to the paralysed muscles This can be done by removing the limb from the water and applying an electrode so as to cover the affected muscles and causing the current to surge as before It may even be necessary to localise the electrode to the peripheral end of the muscle so as to ensure the passage of the current in a longitudinal direction through the muscle In one case of injury of the external popliteal nerve and paralysis of all the muscles supplied with R D , it was noted that when the leg was immersed the surging galvanic current caused contraction of the anterior tibial groups of muscles and raising of the foot The peronei which had a lower degree of excitability did not contract until an electrode was placed over the lower half of the peronei When the electrode covered the peronei *completely* it was noted that they did not contract, and when the current was further strengthened it spread to the anterior tibial muscles and caused contraction of this group

The contraction produced by the surging galvanic current is quite different from the brisk twitch that follows a single excitation of a normal muscle It is not a tetanus like that produced by rapidly repeated excitation of a normal muscle And it is not like the sluggish contraction *and relaxation* following excitation of a muscle with R D by the make of a galvanic current It however resembles the continuous contraction (the so-called galvano-tonus) which is so often seen in muscles with R D during the period of flow of the galvanic current especially during the earlier stages of the paralysis. This galvano-tonic' contraction bears a closer superficial resemblance to the voluntary contraction than that produced by other artificial methods Galvano-tonus ' can sometimes be produced in normal muscles when the current is strong

The writer does not wish to make any statement regarding the relative value of the surging galvanic current and the others commonly used The study of a large number of cases over a long period of time is necessary before any conclusion can be reached. The surging galvanic current can however localise contraction to the paralysed muscles, in two cases only so far has the writer found it to fail In these the paralysed muscles had lost their excitability to faradic galvanic and sinusoidal currents applied with the maximum strength that could be tolerated by the patient The method described has an additional advantage in that in a large proportion of cases, especially those that are fairly recent the limbs can be immersed in water without the labour of applying electrodes or fixing supports to them

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

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CASE OF RUPTURED UTERUS WITH UNRUPTURED MEMBRANES

BY HILDA SHUFFLEBOTHAM M.B , CH B BIRM ,
HOUSE SURGEON WOMEN'S HOSPITAL, BIRMINGHAM.

With Note by S LEWIS GRAHAM M S Lond., F R C S Eng

THE following case is of interest on account, amongst other things of its supposed rarity

Mrs A aged 42, was admitted to the Women s Hospital Birmingham on Sept 8th 1917, as an emergency case The history was that her general health had been very good until the last three years during which time she had suffered from chronic bronchitis She had had 15 pregnancies in 20 years 13 being full term All previous labours were normal and on admission she was at the full term of her fifteenth pregnancy On the day before admission she was doing her ordinary housework until 6 P M when she commenced to have cramp like indefinite pains in the abdomen There was no vaginal loss and the patient did not think she was in labour The pains continued all night, and at 6 o clock next morning she sent for a midwife who examined her and said she was not in labour but that she must call in a doctor At this time she had a sharp loss of bright red blood A local doctor came later in the morning and sent the patient into hospital Until admission at 2 P M the pains had gradually become more severe and the patient felt very ill Foetal movements had been felt until the day before admission The condition on admission was as follows The patient was very fat and bronchitic She looked ill and was collapsed Temperature 98 F , pulse 130 and weak breathing laboured and quicker than normal The abdomen was the size of full term pregnancy it was painful and tender all over Fœtal parts could not be made out definitely (The abdominal wall was fat, and the placenta lay in front of the fœtus) By the vagina there was some dark blood , the os felt thick, it was not on the stretch and was about the size of a four shilling piece The fœtal head was felt indistinctly a long way up

An operation was performed by Mr Lewis Graham On opening the abdomen the maternal surface of the placenta presented *immediately under* the incision The membranes were intact and contained the fœtus cord, and liquor amnii There was dark blood-clot in the abdominal cavity and the uterus was contracted down to the size of a coco-nut It had a rupture along its upper border and was quite empty The membranes were ruptured and the dead fœtus removed, which showed early maceration The placenta and membranes were then removed and a subtotal hysterectomy performed. Blood-clot and liquor amnii were mopped out and the abdomen was closed with a drain to the bottom of Douglas's pouch

Pathological specimen The uterus was quite contracted down, and in this condition the rent was 6 in long At the site of rupture the wall showed marked degeneration, and at its edge was no thicker than a sheet of paper

The progress of the case was as follows The abdominal condition was perfect The patient had a sharp attack of *pneumonia on* Sept 19th

Note by Mr LEWIS GRAHAM

This is the third case I have had of rupture of the uterus with unruptured membranes and a dilated os In two the rupture was complete and the fœtus and its appendages have been free in the abdominal cavity In the third case the uterus had not quite ruptured through its whole thickness In each case the patient has had a large number of pregnancies in rapid succession This would appear to cause the uterine wall to give way under the tension exerted through the liquor amnii by the uterine contractions, but which tension is so slight as not to be able to cause rupture of the unsupported membranes at the *external os* In the case here reported it would be most interesting to know exactly when the uterus ruptured and expelled the fœtus into the abdominal cavity

A CASE OF ADENO CARCINOMA OF THE APPENDIX

BY JOHN A. C MACEWEN, M.B , C M , B SC GLASG ,
ACTING SURGEON GLASGOW ROYAL INFIRMARY CAPTAIN R.A.M C. (T)
NO 4 SCOTTISH GENERAL HOSPITAL CONSULTING SURGEON
TO H.R.H. PRINCESS LOUISE SCOTTISH HOSPITAL FOR
THE LIMBLESS ERSKINE, ETC

THE patient a man aged 43 was admitted to the Glasgow Royal Infirmary under my care on May 24th, suffering from symptoms of acute appendicitis. He had been in good health until a week previous to admission, when he had severe pain in the right side of the abdomen, accompanied by sickness vomiting, and giddiness The pain gradually disappeared but owing to a slight swelling on the right side, which persisted, he was sent into hospital

On admission the patient had no pain, but there was a distinct tumour on the right side on the level of the umbilicus. Temperature 99 2° F pulse 112, respirations 28 An immediate operation was performed, and the tumour was found *to consist of* matted omentum, in the midst of which lay what was at first taken for a loop of much inflamed and thickened small bowel On investigation however, the "bowel" was seen to be greatly thickened appendix, the removal of which presented no special features of interest There was a considerable amount of purulent matter in the region of the mass necessitating packing Patient made an uneventful recovery

Examination of the appendix after removal revealed a spherical white tumour, the size of a large marble located in the proximal end, involving the greater part of the periphery of the wall of the appendix, and markedly blocking the lumen The appendix beyond the tumour was much thicker than normal and the lumen much distended A microscopical examination of the tumour showed it to be of the nature of a papillomatous growth with considerable inflammatory infiltration, while the deeper parts of the growth were adeno-carcinomatous The tumour was almost confined to the mucous coat of the appendix

Glasgow

Mr Samuel Craddock, M R.C S L S A of Bath, this month completes 50 years' service as coroner for North Somerset

Medical Societies.

MEDICAL SOCIETY OF LONDON

President's Address —A Discussion on War Bread and its Effects on Health

A MEETING of this society was held on Oct 8th, when Sir STCLAIR THOMSON, the President, delivered an address on the Founder and the Foundation of the Medical Society

Dr ROBERT HUTCHISON and Dr E I SPRIGGS introduced a discussion on War Bread and its Effects on Health Dr HUTCHISON said that before discussing the effects of war bread on health it was necessary to know something of its composition The wheat berry consisted of three parts—the pericarp, germ, and endosperm In making ordinary white (pre war) flour only about 70 per cent of the wheat berry was used, the germ and pericarp being entirely discarded and used mainly for fodder In order to economise wheat it was now compulsory for millers to extract 80 per cent of the wheat berry as flour, and some of the pericarp and germ was included This Government regulation (G R) flour was the basis of war bread Chemically such flour was richer in every constituent except starch than wheat flour, and in particular it was richer in vitamines and phosphorus The question of its absorbability as compared with white flour was still *sub judice*, but there was no reason to suppose that it was inferior in this respect to white flour provided it were finely ground War bread, however, was not always made from G R flour only The addition of other cereals (maize, barley, rice, oats) up to certain limits was allowed The proportion of these added by different millers varied, and it had been found impossible to standardise the flour for the whole country None of the added cereals, however, could be regarded as injurious, and all were valuable foods Maize had come in for most popular criticism, but if properly ground there was no harm in it, and much of the hostility to it was due to prejudice As regards the bread, it must be recognised that it was impossible to prepare from the present flour a bread which had the same *æsthetic* qualities as pre war bread. The darker colour was of no importance, but the relatively lower proportion of gluten, especially when other cereals were added, caused the bread to be less porous This drawback would become less as bakers acquired more experience with the flour As regards its effect on health, it seemed certain that there was nothing *chemically* injurious in war bread , indeed, it was superior from a chemical point of view to white bread Any ill effects could only be due to its *mechanical* properties (presence of grit, doughiness, &c), and could only affect the digestive organs The quality of the bread produced in different parts of the country, and even by different bakers, varied greatly in these respects, but from fairly wide inquiry there was no real evidence of any serious disturbance of digestion by the bread in the great majority of individuals It must be remembered that patients were apt to find in the war bread a convenient explanation of any disturbance of health for which they could not otherwise account In cases in which the bread seemed to disagree the effect of toasting and more thorough chewing should be tried. The speaker had not himself seen any patient in whose case he was convinced that the bread had affected the digestion unfavourably

Dr SPRIGGS said that he had not found it necessary to order white bread for the patients in Duff House, although there was always a good number of sufferers from digestive complaints The war bread was, however, much better in some districts than in others, and their experience was, perhaps, fortunate The complaints which followed the measures taken by the Government to make good the lack of wheat by the use of other kinds of corn arose from several reasons The change in flavour was one reason Another one was the lack of skill and experience in making the bread with the new kinds of flour Further the mass of our people did not realise before the war that the cereals given to animals were good human foods, and did not know that by eating oats, barley, or maize ourselves we could get from them many times the food value that was obtained by turning them first into animal food He referred to the figures of Professor T B Wood, who calculated that of nearly 17 million tons of various kinds of corn used in this country before the war only 5 millions went for human food This was less than the average production of home grown corn, which amounted to 6½ millions tons Dr Spriggs said that he had advocated the use in home-made bread of a mixture of barley flour or meal, oatmeal, rice, or maize, in the proportion of one part of the meal to two parts of wheat flour or war flour This was a higher proportion of other cereals than millers were using at present (Examples of these different kinds of bread were shown to the meeting and tasted by the members Breads were also shown in which the added cereal had been boiled before mixing with the flour, making a spongier loaf) In order to compare the digestibility of such bread with that made from wheat flour experiments had been made by Mr A B Weir, B Sc., chemist at Duff House, and himself The subject was a healthy young man who took a mixed diet containing the same foods and in the same quantities every day, each article being weighed or measured accurately The diet was was follows —Breakfast Eggs, butter, bacon, marmalade, cocoa, milk Dinner Fillet of beef, potato, cabbage rice pudding, tinned pears, butter, cream, black coffee Tea Butter, jelly, milk, cocoa Supper Clear soup, haddock butter, cheese, coffee, milk With this a loaf of bread weighing about a pound was eaten daily The bread was composed of two thirds of white flour and a third of the meal or flour to be tested, and was made as described in Chapter IX of "Food and How to Save it."[1] These breads were compared with bread made from white flour alone, also with a war bread containing 10 per cent barley and 10 per cent maize All the breads were palatable and were preferred by the subject to baker's bread with the exception of that made with maize, the proportion of which (33 per cent) was too high for making nice bread The war bread, which contained 10 per cent of barley and 10 per cent of maize, was thought to be one of the nicest Each experiment lasted three days The flours were analysed separately The other foods were all minced, mixed together, and analysed The excreta for each three days were collected and their composition determined The results were given to the meeting and showed that, although there were differences in the amount of protein, carbohydrate, and fat assimilated, yet the variations were not of importance, the total amount of foodstuff assimilated when expressed in calories being almost the same in each experiment—namely between 95 and 96 per cent of the food value eaten The experiments demonstrated that bread composed of mixed cereals in the proportions recommended was palatable and, in this subject proved as nutritious as white bread

Professor W H THOMPSON, adviser to the Ministry of Food, said that it was important to get our protein food from a number of sources, because all proteins were not "adequate" for both growth and maintenance Even maize had about one third of its protein of the adequate type He thought that much of the trouble was due to ignorance in milling and baking In the early days millers were not fitted out to grind maize to a sufficient degree of fineness Observations were now being carried out which he hoped would enable all that difficulty to be overcome Samples of bread complained of had been sent to the Ministry of Food but in no case could anything be found wrong except the colour

Dr E KINGSCOTE said that he had been in North Italy before the war, where a large part of the community lived altogether on maize, many having no other food, but they were well nourished and healthy He thought that the admixture of two flours might be the cause of the difficulty The grinding of the maize was not equal to the grinding of the wheat, and in baking each required a different amount of time to arrive at perfect cooking

Sir STCLAIR THOMSON said that the important matter of bread did not escape Lettsom's attention It was gathered from his writings that the price of the quartern loaf in 1774 was 8*d* but by 1800 he wrote that the quartern loaf was 1*s* 6*d* , 'a sum truly oppressive to the poor" With our present-day quartern loaf at only 9*d* after three years of world war our population might take courage by seeing what our forefathers had to endure in the Napoleonic struggles In 1774 Lettsom, amongst his numerous essays printed one entitled "Hints respecting a Substitute for Wheat Bread " The substitute he warmly recommended was the fine flour of Indian corn to be mixed with that of wheat in equal proportions He added that, if rightly managed the colour would be about the same as the standard wheaten bread and about 2*d* in the quartern loaf cheaper than the fine wheaten when that might be at 8*d* per quartern. After insisting on the great nutritive value and the agreeable sweet flavour of maize, he wrote that some, indeed, did not so easily reconcile themselves to it which often arose from the mismanagement of grinding the corn or baking the bread The bakers, he said, had not acquired the best method of mixing and preparing it with wheat flour, and as to the grinding he advised that the millstones should first be set so wide as but just to burst the thick or farinaceous part of the grain, which should then be passed through a sieve so as to separate the part of the interior edge of the grain composed of a ligneous spongy substance, the middle of which was of a dark brown colour and of a bitter taste, which, if ground into the flour, gave it a disagreeable flavour When this deleterious part had been separated on the sieve the remainder should be ground with the stones set so as to render it sufficiently fine. Lettsom also suggested the use of potatoes as a partial substitute for bread, and recommended the use of one-fourth of potatoes with the remainder of flour He pointed out that if a little ground rice were added the bread was prevented from crumbling, a matter of consequence in a large family

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[1] Published by H M Stationery Office 1917 Price 3d

Reviews and Notices of Books.

The New System of Gynæcology Edited by THOMAS WATTS EDEN, M D Edin., F R C S Edin., F R C P Lond., Obstetric Physician Charing Cross Hospital, Surgeon Chelsea Hospital for Women and CUTHBERT LOCKYER, M D, B S Lond, F R C S Eng, F R C P Lond., Obstetric Physician to Out-patients Charing Cross Hospital, Surgeon to In patients, Samaritan Free Hospital. In three volumes With numerous illustrations in colour and black and white. London Macmillan and Co 1917 Price £6 6*s*

THIS work is really a second edition of the System of Gynæcology' published in 1906 in association with Clifford Allbutt's System of Medicine. We quite agree with the editors when they maintain that the gynæcologist is a surgeon rather than a physician, but the best combination is that of physician and surgeon which exists when he practises both obstetric medicine and gynæcological surgery as he does in most of the larger hospitals in this country We do not believe in the divorce of gynæcology from obstetrics The gynæcologist certainly should have an acquaintance with the diseases of the kidney rectum and bladder but we hardly think that diseases of the breast fall within his province nor do we believe that the majority of gynæcologists treat these diseases In our opinion, therefore the editors have been ill advised to burden an already large book by the addition of sections dealing with these surgical affections The specialist who wishes to study the diseases of these organs will not refer to a treatise on gynæcology he will consult rather a treatise on surgery and in this he would be showing his wisdom. The result of the inclusion of these sections is three volumes where two might have been sufficient and a considerable increase in the cost of the book. No doubt the sections on general surgery which have been included are very good as far as they go but naturally they cannot be so full as they might and probably would be in a System of Surgery For these reasons we shall make little reference to them although several of them are of great merit.

The work has been issued in three volumes containing in all some 2507 pages The format, printing and paper are a great improvement on the original edition, and the whole is a most readable System The first section in Vol I is a good, but too short account of the Anatomy of the Pelvic Organs by Professor Elliot Smith and Dr J S B Stopford We wish that the editors had allowed them more space. In the second chapter Miss A L McIlroy discusses the Physiology of the Female Reproductive Organs She regards the luteal cells as the undischarged follicle cells a view in direct contradiction to that expressed by Dr Lockyer and Dr H Williamson in other parts of the book. The section is good and complete, and the writer is careful not to draw unwarranted conclusions Dr Ernest Shaw contributes a good description of the organisms met with in the female genito-urinary tract and Mr Beckwith Whitehouse devotes some 70 pages to discussing methods of examination which hardly seem necessary in a work of this character The book will only appeal to the advanced student, and more particularly appeals to the teacher and specialist Dr W W C Topley writes on the various methods of blood examination of proved clinical significance It is interesting to note that he counsels the clinician to await further developments before placing reliance on Abderhalden's test for pregnancy Dr J W Ballantyne contributes a very interesting article on Malformations of the Female Generative Organs The anomalies of the uterus would be rendered much easier to understand if it were pointed out as is done by Professor A. Keith in his book on 'Human Embryology," how all the varying forms of uterine mal-developments are met with as the normal condition in the different classes of animals This wise generalisation has been found of great assistance in teaching students Dr W Blair Bell contributes a long article on Disorders of Function which contains many most interesting statements, some of which are more convincing than others Dr G Blacker has written a very complete account of tubal pregnancy, including the subject of hæmatocele, which in the previous edition was considered, quite wrongly, apart from its main cause—viz ectopic gestation.

The rest of this volume is devoted mainly to pelvic infections Dr Carlton Oldfield contributes a good account of Septic Infections in which he lays too much stress, perhaps, upon the now somewhat old fashioned distinction between sapræmia and septicæmia. He apparently has not much faith in sera or vaccines and, we are glad to see states that it is doubtful whether operative treatment of puerperal pyæmia gives a greater percentage of recoveries than the expectant method.

Naturally in a book by so many different authors there are bound to be striking contradictions On p 553 we are told that "hysterectomy for puerperal infection should not be thought of," while on p 663 we find 'without a doubt there are cases which can be saved by surgical interference and by nothing else.' Dr T G Stevens's article on Gonorrhœa in Women is very practical and to the point and there is a good description of Tuberculosis of the Pelvic Organs by Dr Clifford White It is a pity that the editors have not insisted upon consistency in the use of terms such as tubercular and tuberculous, on p 627 both terms are used indiscriminately The latter is of course, the correct one in the circumstances The section dealing with Inflammation of the Fallopian Tubes by Dr J M Munro Kerr is essentially clinical while in that on Pelvic Cellulitis, by Dr J S Fairbairn the good work done by the late Dr Cullingworth is fully recognised. There is a short, in our opinion too short article on Syphilis in Women by Mr A. Shillitoe, of which the most interesting portion is that dealing with conceptional syphilis Two of the most original and important articles in this volume are those dealing with Streptothrix and Echinococcal Infections of the Pelvic Viscera, by Dr H C Taylor Young and Professor D A. Welsh. A short article on Nervous Diseases Associated with Morbid Conditions of the Pelvic Organs is contributed by Dr Purves Stewart

Vol. II opens with a good and well illustrated account of Diseases of the Vulva and Vagina by Mr Comyns Berkeley The article on endometritis by Professor B P Watson is the best and clearest account we are acquainted with of this often talked of but rarely met with condition and should do much to remove the confusion which is still present in the minds of so many writers on this subject. We hardly regard erosion of the cervix as worth a special section. An extremely interesting and important article one of the best in the whole work with a number of beautiful coloured illustrations is that by Dr Fletcher Shaw on Chronic Metritis Professor R G McKerron writes on Morbid Involution and Dr Hastings Tweedy on Cervical Lacerations Dr Lockyer will add greatly to his reputation as a pathologist and careful clinical observer by his article on Myomata—emphatically the best account of these tumours to be found in any text-book. In devoting, however, some 80 pages to the engrossing but not very important subject of adenomyomata he has allowed his enthusiasm to overcome his sense of proportion This section is rather of the

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A MEETING of this society was held on Oct 8th, when Sir **StClair Thomson**, the President, delivered an address on the Founder and the Foundation of the Medical Society

Dr **Robert Hutchison** and Dr **E I Spriggs** introduced a discussion on War Bread and its Effects on Health Dr **Hutchison** said that before discussing the effects of war bread on health it was necessary to know something of its composition The wheat berry consisted of three parts—the pericarp, germ, and endosperm In making ordinary white (pre war) flour only about 70 per cent of the wheat berry was used, the germ and pericarp being entirely discarded and used mainly for fodder In order to economise wheat it was now compulsory for millers to extract 80 per cent of the wheat berry as flour, and some of the pericarp and germ was included This Government regulation (G R) flour was the basis of war bread Chemically such flour was richer in every constituent except starch than wheat flour, and in particular it was richer in vitamines and phosphorus The question of its absorbability as compared with white flour was still *sub judice*, but there was no reason to suppose that it was inferior in this respect to white flour provided it were finely ground War bread, however, was not always made from G R flour only The addition of other cereals (maize, barley, rice, oats) up to certain limits was allowed The proportion of these added by different millers varied, and it had been found impossible to standardise the flour for the whole country None of the added cereals, however, could be regarded as injurious, and all were valuable foods Maize had come in for most popular criticism, but if properly ground there was no harm in it, and much of the hostility to it was due to prejudice As regards the bread, it must be recognised that it was impossible to prepare from the present flour a bread which had the same *æsthetic* qualities as pre war bread The darker colour was of no importance, but the relatively lower proportion of gluten, especially when other cereals were added, caused the bread to be less porous This drawback would become less as bakers acquired more experience with the flour As regards its effect on health, it seemed certain that there was nothing *chemically* injurious in war bread, indeed, it was superior from a chemical point of view to white bread Any ill effects could only be due to its *mechanical* properties (presence of grit, doughiness, &c), and could only affect the digestive organs The quality of the bread produced in different parts of the country, and even by different bakers, varied greatly in these respects, but from fairly wide inquiry there was no real evidence of any serious disturbance of digestion by the bread in the great majority of individuals It must be remembered that patients were apt to find in the war bread a convenient explanation of any disturbance of health for which they could not otherwise account In cases in which the bread seemed to disagree the effect of toasting and more thorough chewing should be tried The speaker had not himself seen any patient in whose case he was convinced that the bread had affected the digestion unfavourably

Dr **Spriggs** said that he had not found it necessary to order white bread for the patients in Duff House, although there was always a good number of sufferers from digestive complaints The war bread was, however, much better in some districts than in others, and their experience was, perhaps, fortunate The complaints which followed the measures taken by the Government to make good the lack of wheat by the use of other kinds of corn arose from several reasons The change in flavour was one reason Another one was the lack of skill and experience in making the bread with the new kinds of flour Further the mass of our people did not realise before the war that the cereals given to animals were good human foods, and did not know that by eating oats barley, or maize ourselves we could get from them many times the food value that was obtained by turning them first into animal food. He referred to the figures of Professor T B Wood, who calculated that of nearly 17 million tons of various kinds of corn used in this country before the war only 5 millions went for human food This was less than the average production of home grown corn, which amounted to 6½ millions tons Dr Spriggs said that he had advocated the use in home-made bread of a mixture of barley flour or meal, oatmeal, rice, or maize, in the proportion of one part of the meal to two parts of wheat flour or war flour This was a higher proportion of other cereals than millers were using at present (Examples of these different kinds of bread were shown to the meeting and tasted by the members Breads were also shown in which the added cereal had been boiled before mixing with the flour, making a spongier loaf) In order to compare the digestibility of such bread with that made from wheat flour experiments had been made by Mr A. B Weir, B Sc., chemist at Duff House, and himself The subject was a healthy young man who took a mixed diet containing the same foods and in the same quantities every day, each article being weighed or measured accurately The diet was was follows —Breakfast Eggs, butter, bacon, marmalade, cocoa, milk Dinner Fillet of beef, potato, cabbage, rice pudding, tinned pears, butter, cream, black coffee Tea Butter, jelly, milk, cocoa Supper Clear soup, haddock butter, cheese, coffee, milk With this a loaf of bread weighing about a pound was eaten daily The bread was composed of two thirds of white flour and a third of the meal or flour to be tested, and was made as described in Chapter IX of "Food and How to Save it."[1] These breads were compared with bread made from white flour alone, also with a war bread containing 10 per cent barley and 10 per cent maize All the breads were palatable and were preferred by the subject to baker's bread, with the exception of that made with maize, the proportion of which (33 per cent) was too high for making nice bread The war bread, which contained 10 per cent of barley and 10 per cent of maize, was thought to be one of the nicest. Each experiment lasted three days The flours were analysed separately The other foods were all minced, mixed together, and analysed The excreta for each three days were collected and their composition determined The results were given to the meeting and showed that, although there were differences in the amount of protein, carbohydrate, and fat assimilated, yet the variations were not of importance, the total amount of foodstuff assimilated when expressed in calories being almost the same in each experiment—namely between 95 and 96 per cent of the food value eaten The experiments demonstrated that bread composed of mixed cereals in the proportions recommended was palatable and, in this subject, proved as nutritious as white bread

Professor W H **Thompson** adviser to the Ministry of Food, said that it was important to get our protein food from a number of sources, because all proteins were not "adequate" for both growth and maintenance Even maize had about one third of its protein of the adequate type He thought that much of the trouble was due to ignorance in milling and baking In the early days millers were not fitted out to grind maize to a sufficient degree of fineness Observations were now being carried out which he hoped would enable all that difficulty to be overcome Samples of bread complained of had been sent to the Ministry of Food but in no case could anything be found wrong except the colour

Dr E **Kingscote** said that he had been in North Italy before the war, where a large part of the community lived altogether on maize many having no other food but they were well nourished and healthy He thought that the admixture of two flours might be the cause of the difficulty The grinding of the maize was not equal to the grinding of the wheat, and in baking each required a different amount of time to arrive at perfect cooking

Sir **StClair Thomson** said that the important matter of bread did not escape Lettsom's attention It was gathered from his writings that the price of the quartern loaf in 1774 was 8*d* but by 1800 he wrote that the quartern loaf was 1*s* 6*d*, "a sum truly oppressive to the poor" With our present-day quartern loaf at only 9*d* after three years of world war our population might take courage by seeing what our forefathers had to endure in the Napoleonic struggles In 1774 Lettsom, amongst his numerous essays printed one entitled "Hints respecting a Substitute for Wheat Bread" The substitute he warmly recommended was the fine flour of Indian corn to be mixed with that of wheat in equal proportions He added that, if rightly managed the colour would be about the same as the standard wheaten bread and about 2*d* in the quartern loaf cheaper than the fine wheaten when that might be at 8*d* per quartern After insisting on the great nutritive value and the agreeable sweet flavour of maize, he wrote that some, indeed, did not so easily reconcile themselves to it, which often arose from the mismanagement of grinding the corn or baking the bread The bakers, he said, had not acquired the best method of *mixing* and preparing it with wheat flour, and as to the grinding, he advised that the millstones should first be set so wide as but just to burst the thick or farinaceous part of the grain, which should then be passed through a sieve so as to separate the part of the interior edge of the grain composed of a ligneous spongy substance the middle of which was of a dark brown colour and of a bitter taste, which, if ground into the flour, gave it a disagreeable flavour When this deleterious part had been separated on the sieve the remainder should be ground with the stones set so as *to render it sufficiently fine* Lettsom also suggested the use of potatoes as a partial substitute for bread, and recommended the use of one-fourth of potatoes with the remainder of flour He pointed out that if a little ground rice were added the bread was prevented from crumbling, a matter of consequence in a large family

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[1] Published by H M. Stationery Office 1917 Price 3*d*

Reviews and Notices of Books.

The New System of Gynæcology Edited by THOMAS WATTS EDEN, M D Edin, F R.C S Edin. F R C P Lond., Obstetric Physician Charing Cross Hospital, Surgeon, Chelsea Hospital for Women and CUTHBERT LOCKYER, M D B S Lond, F R C S *Eng* *F R C P* Lond, Obstetric Physician to Out-patients, Charing Cross Hospital, Surgeon to In patients, Samaritan Free Hospital In three volumes With numerous illustrations in colour and black and white London Macmillan and Co 1917 Price £6 6s

THIS work is really a second edition of the 'System of Gynæcology published in 1906 in association with Clifford Allbutt s System of Medicine. We quite agree with the editors when they maintain that the gynæcologist is a surgeon rather than a physician, but the best combination is that of physician and surgeon which exists when he practises both obstetric medicine and gynæcological surgery, as he does in most of the larger hospitals in this country We do not believe in the divorce of gynæcology from obstetrics The gynæcologist certainly should have an acquaintance with the diseases of the kidney rectum, and bladder but we hardly think that diseases of the breast fall within his province, nor do we believe that the majority of gynæcologists treat these diseases. In our opinion, therefore the editors have been ill-advised to *burden* an already large book by the addition of sections dealing with these surgical affections. The specialist who wishes to study the diseases of these organs will not refer to a treatise on gynæcology he will consult rather a treatise on surgery, and in this he would be showing his wisdom The result of the inclusion of these sections is three volumes where two might have been sufficient and a considerable increase in the cost of the book. No doubt the sections on general surgery which have been included are very good as far as they go but naturally, they cannot be so full as they might, and probably would be in a System of Surgery For these reasons we shall make little reference to them although several of them are of great merit.

The work has been issued in three *volumes* containing in all some 2507 pages The format, printing and paper are a great improvement on the original edition, and the whole is a most readable System The first section in Vol I is a good, but too short account of the Anatomy of the Pelvic Organs by Professor Elliot Smith and Dr J S B Stopford We wish that the editors had allowed them more space. In the second chapter Miss A. L McIlroy discusses the Physiology of the Female Reproductive Organs She regards the luteal cells as the undischarged follicle cells a view in direct contradiction to that expressed by Dr Lockyer and Dr H Williamson in other parts of the book. The section is good and complete, and the writer is careful not to draw unwarranted conclusions Dr Ernest Shaw contributes a good description of the organisms met with in the female genito-urinary tract and Mr Beckwith Whitehouse devotes some 70 pages to discussing methods of examination which hardly seem necessary in a work of this character The book will only appeal to the advanced student, and more particularly appeals to the teacher and *specialist* Dr W W C *Topley writes on* the various methods of blood examination of proved clinical significance It is interesting to note that he counsels the clinician to await further developments before placing reliance on Abderhalden s test for pregnancy Dr J W Ballantyne contributes a *very interesting* article on Malformations of the Female Generative Organs The anomalies of the uterus would be rendered much easier to understand if it were pointed out as is done by Professor A. Keith in his book on 'Human Embryology," how all the varying forms of uterine mal-developments are met with as the normal condition in the different classes of animals This wise generalisation has been found of great assistance in teaching students Dr W Blair Bell contributes a long article on Disorders of Function which contains many most interesting statements, some of which are more convincing than others Dr G Blacker has written a very complete account of tubal pregnancy, including the subject of hæmatocele, which in the previous edition was considered, quite wrongly, apart from its main cause—viz, ectopic gestation

The rest of this volume is devoted mainly to pelvic infections Dr Carlton Oldfield contributes a good account of Septic Infections, in which he lays too much stress, perhaps, upon the now somewhat old fashioned distinction between sapræmia and septicæmia. He apparently has not much *faith in sera or vaccines* and we are glad to see states that it is doubtful whether operative treatment of puerperal pyæmia gives a greater percentage of recoveries than the expectant method

Naturally, in a book by so many different authors there are bound *to* be striking contradictions On p 553 we are told that "hysterectomy for puerperal infection should not be thought of" while on p 663 we find "without a doubt there are cases which can be saved by surgical interference and by nothing else." Dr T G Stevens's article on Gonorrhœa in Women is very practical and to the point, and there is a good description of Tuberculosis of the Pelvic Organs by Dr Clifford White It is a pity that the editors have not insisted upon consistency in the use of terms such as tubercular and tuberculous, on p 627 both terms are used indiscriminately The latter is of course, the correct one in the circumstances The section dealing with Inflammation of the Fallopian Tubes, by Dr J M Munro Kerr, is essentially clinical while in that on Pelvic Cellulitis, by Dr J S Fairbairn the good work done by the late Dr Cullingworth is fully recognised. There is a short, in our opinion too short, article on Syphilis in Women by Mr A. Shillitoe, of which the most interesting portion is that dealing with conceptional syphilis Two of the most original and *important* articles in this volume are those dealing with Streptothrix and Echinococcal Infections of the Pelvic Viscera, by *Dr* H C Taylor Young and Professor D A. Welsh. A short article on Nervous Diseases Associated with Morbid Conditions of the Pelvic Organs is contributed by Dr Purves Stewart

Vol II opens with a good and well illustrated account of Diseases of the Vulva and Vagina by Mr *Comyns Berkeley* The article on endometritis by Professor B P Watson is the best and clearest account we are acquainted with of this often talked of but rarely met with condition, and should *do much to remove* the confusion which is still present in the minds of so many writers on this subject. We hardly regard erosion of the cervix as worth a special section. An extremely interesting and important article, one of the best in the whole work with a number of beautiful coloured illustrations is that by Dr Fletcher Shaw on Chronic Metritis Professor R G McKerron *writes* on Morbid Involution and Dr Hastings Tweedy on Cervical Lacerations Dr Lockyer will add greatly to *his* reputation as a pathologist and careful clinical observer by his article on Myomata—emphatically the best account of these *tumours* to be found in any text-book. In devoting, *however* some 80 pages to the engrossing but not very important subject of adenomyomata he has allowed *his* enthusiasm to overcome his sense of proportion This section is rather of the nature of a critical essay and contains the names of numerous writers without references Lists of names are useless to the student, and annoying to the expert when unaccompanied by references so that he may without undue difficulty refer to the originals Dr R W Johnstone contributes an interesting account of Sarcomata of the Uterus The section on Cancer of the Uterus by Professor T Wilson is a mine of information We are afraid, however, that the author's pathology will tend to increase the confusion which surrounds at present this subject His statements are hardly borne out by his illustrations, so far as it is possible for the reader to draw any conclusions from them as to the correctness of the statements made We do not fancy that Professor Wilson will find much support for his views among pathologists, nor do we regard them as correct Of the excellence of the article as a whole there can be no question, and the discussion on treatment will be read by all gynæcologists with great interest It is the more valuable because the writer is able to contrast in an authoritative manner the older with the more modern results of operative interference Professor H J Teacher's article on Chorion Epithelioma Malignum is as might be expected very full and good Professor W W Chipman writes a reasoned and effective account of Backward Displacements of the Uterus, in which he lays appropriate stress upon the large part played by some degree of prolapse in these cases, and which includes a well balanced discussion of operative treatment In his account of Prolapse of the Uterus Dr W E Fothergill who has changed his views, maintains if the surgeon can do vaginal work well no abdominal operation should be performed for this condition. He is very optimistic about the results of such operations, and in this he differs from most writers We are glad to see that he condemns hysterectomy for uncomplicated prolapse The section on Inversion of the Uterus is contributed by Professor W C Swayne Dr Lockyer, in the article on cysts and tumours of the Fallopian tubes, alludes to the embryonic tubules regarded by Professor A Keith as the homologues of the rete testis We can find no allusion to this interesting question either in the index or in the article on the anatomy and development of the pelvic organs This volume is completed by a very clear and good account of Tumours of the Ovary by Dr H Williamson and Dr J D Barris

Vol. III contains articles on Diseases of the Breast by Mr C C Choyce, on the Vermiform Appendix, by Mr H J Paterson, on Methods of Examination of the Urethra and Bladder, by Mr J Thomson Walker, on Diseases of the Rectum, by Mr J P Lockhart-Mummery, and Intestinal Complications in Gynæcological Surgery, by the late Mr Scott Carmichael Mr W Gilliatt writes on Affections of the Urinary Tract, and Dr Eardley Holland on Hernia in Women A good article on the Technique of Gynæcological Operations is contributed by one of the editors, Dr Eden There is a short but clear section dealing with anæsthetics, by Dr F S Rood, and this is followed by two articles of considerable interest, by Dr A. Donald and Dr A. E Giles respectively, on ovariotomy and hysterectomy Dr Giles's article is a particularly good and interesting one, as it includes some valuable statistics and a summary of the history of the development of the operation Surgical operations on the gravid uterus are described by Professor Munro Kerr with commendable brevity and clearness We notice he does not think that extraperitoneal Cæsarean section will survive unless it is proved that the cicatrix in the lower uterine segment is stronger than one in the upper part of the body of the uterus Professor Howard Taylor's section on vaginal cœliotomy is good but gives one the impression that his advocacy of this method is of a somewhat half hearted nature, and, if this is so we are in agreement with him Professor J B Hellier deals with fistulæ in the female pelvic organs Mr Victor Bonney describes the various minor gynæcological operations, and Professor Franklin Martin writes a most instructive chapter termed the After treatment of Gynæcological Operations (should it not be of patients after such operations?) The articles on Röntgen Rays and Radio-Therapeutics in Gynæcological Practice would be of greater value if they were a little more up to date

It is impossible to do complete justice to a work of this scope in a review We have no hesitation however, in saying that this "System" does the greatest credit to all concerned in its production and it is the best and most complete work on gynæcology which has appeared so far in the English language The illustrations are many of them of great beauty and extremely well reproduced, and great credit is due to the artists who drew them We hope, however, when the book reaches a second edition that the editors will improve it by adding a proper bibliography to each section by enlarging and revising the index and equipping each volume with a general index, and by omitting all the articles on purely surgical subjects In this way the size of the work might well be reduced and at the same time its cost, which is excessive

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Acute Appendicitis Practical Points from a 20 Years Experience By C HAMILTON WHITEFORD M R C S, L R C P Lond, late Specialist in Surgery, Military Hospital, Devonport, Author of 'Anæsthetics in Surgery," &c London Harrison and Sons 1917 *Pp* 72. Price 4s net

IN this little book the author has put together the main facts relating to the diagnosis and treatment of acute appendicitis In the diagnosis the several symptoms are discussed seriatim, so that the reader is made to understand their relative value The indications for operation are also clearly given The author is in favour of immediate operation in all cases but he limits the operation to incision and drainage if an abscess is present and the appendix does not present itself, while if any diffuse peritonitis is present and the patient is collapsed no attempt is made to remove the appendix even if it has not ruptured The book is certainly likely to be useful, and with nearly all the opinions expressed we fully agree but it does not contain sufficiently detailed instructions For instance, the author, with good reason, praises highly the "Murphy drip," or protoclysis, and he mentions many useful points in connexion with it, but we feel sure that no one unacquainted with the method would be able to carry it out from the instructions contained in this book We should be interested to learn why the author writes "appendiceal' and "nossil."

The Biology of Twins (Mammals) By HORATIO HACKETT NEWMAN The University of Chicago Science Series With plate and 65 figures in text University of Chicago Press, Chicago, Illinois 1917 *Pp* 185 Price $1 25

THIS little book contains an excellent account of the curious and very special phenomenon of polyembryony in certain armadillos The condition has been known to zoologists for many years, but it is due to the labours of M Fernandez, J T Patterson, and the author of this volume that it has been placed of late upon a firm basis of ascertained fact As a connected account of this curious phase of reproduction the work is a useful one to the biologist Some account is also given of the production of twins in man, and the work of Wilder is presented with some fullness, but it cannot be said that this portion of the book reaches the level attained by the chapters on armadillos Among the list of "authors" at the end of the volume one notes the name of P J Barnum This is obviously intended for the late Mr P T Barnum, who is included as an authority on human twins on the strength of having exploited the Siamese twins On the other hand, one looks for the name or the work of Ballantyne in vain

The subject of twins among the offspring of cattle is dealt with in a far less satisfactory manner Here the work of F R Lillie is largely followed and the "hormonic theory' of the formation of the freemartin is upheld In assuming that the freemartin is a female with certain male characters the author throws aside the work of Berry Hart and others in a manner which is not in accord with the best traditions of science

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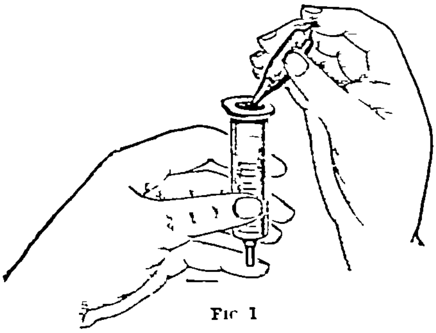

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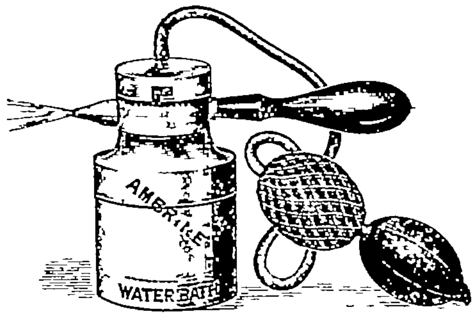

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THE LANCET, June 10th, 1916 —

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THE LANCET.

LONDON: SATURDAY, OCTOBER 13, 1917.

Prophylaxis in Venereal Disease.

As we announced last week, the question of the artificial prophylaxis of venereal disease has been discussed recently by the National Council for Combating Venereal Diseases, and a special meeting of the Council will be held on Monday next, Oct. 15th, at the house of the Royal Society of Medicine, and will have before it a resolution, the fate of which is awaited with deep attention by the medical profession and the public. The resolution which will be submitted to the National Council by the Executive Committee of that body runs as follows:—

> In view of the public attention now directed to the whole subject of prophylaxis, the Executive Committee, after careful consideration, is not prepared to depart from its original position, in which, in accordance with the spirit of the Royal Commission's Report, it refrained from recommending the adoption of prophylaxis—i.e., the provision of outfits to men before sexual indulgence. The committee strongly urge the importance of the making of arrangements for the early treatment of venereal disease even before the outset of symptoms.

Will the National Council remain of the opinion expressed in the resolution?

The whole question of the artificial prophylaxis of venereal disease is thus introduced *for debate* by the National Council, but in considering that question we are now regarding generally the health of the public in the fourth year of war, and especially the condition of our Imperial Armies, both as fighting men and as future citizens. We are not blind to the religious forces which coerce the vote of some consciences on all sexual matters, nor do we write ignoring the claims made by many public-spirited and enlightened women for an equality of treatment between the two sexes in regard to circumstances which surround mutual actions. These things have due weight with all who desire the right. They will certainly receive earnest attention from the National Council when considering the resolution of the Executive Committee. We do not discuss them here because all that is to be said along the two lines indicated has been said so often that our readers are familiar with the arguments and know exactly why the National Council has adopted the line of policy indicated in the resolution. Attention is called now to the fact that the facilitation for men of artificial prophylaxis before sexual indulgence has been deliberately excluded from the scheme devised by the National Council. The Council, in declining to recommend or to take cognisance of any steps of the kind, has followed the lead given to it by the Report of the Royal Commission on Venereal Diseases the translation of whose conclusions into law was the reason for the creation of the Council. The Executive Committee urge upon the National Council the importance of the making of arrangements for the early treatment of venereal diseases, even before the onset of symptoms, but they do not now, any more than in the past, advise any departure from the original line taken up with regard to artificial prophylaxis. They will expect to be asked to support the policy which they continue to advocate by facts, inasmuch as facts are being brought forward to make it doubtful if their policy is now the best, whatever it may have been two years ago. And it would probably be better if preventive treatment, for purposes of the discussion that must ensue, were divided into three headings, and that under each the circumstances of the civilian population were regarded as differing from those of the Navy and Army. The three headings are (1) artificial prophylaxis; (2) early preventive treatment; and (3) the control of loose women in certain areas. It seems to us clear that the preventive treatment in relation to venereal disease among troops should start earlier than it does now—that is to say, that the form of prophylaxis alluded to in the report of the Executive Committee should no longer be refrained from. We published last week a brief account of the measures taken in great centres in India and Australia to enlighten the public generally as to the incidence of venereal disease, and especially to protect the soldiers; and it is largely in the interest of the Colonial contingents of our Army that the National Council for Combating Venereal Diseases may be inclined to depart from its original position. The Canadian, Australian, and especially the New Zealand troops have suffered greatly from venereal disease, and, with regard to the last, we have been furnished with figures—supplied also, we understand, to New Zealand newspapers—which almost justify the phrase employed in the communication that "London is the plague spot of the world." There can be no doubt that the feeling among numerous officers of our Colonial troops is that the facilitation of artificial prophylaxis is necessary for the safety of their men, while many are convinced that the control of loose women would greatly increase the fighting strength, and would annul the risk that the soldiers may carry back to their homes hereditary disease as well as the glory of having fought for their country. To these feelings every consideration is due; and, if the views expressed can be supported statistically, the country at large will hold that the National Council for Combating Venereal Diseases have a responsibility put upon them by the war that was not upon them when they were created to carry out the valuable conclusions of the Royal Commission.

We are in the face of military facts: all men are wanted, and venereal disease prevents a certain proportion of them from responding to the call. Measures might quite sensibly be taken now which would have no justification in normal times, nor would a change of attitude at such a juncture mean a permanent return to discredited social tactics. We are at this moment reconciled, with a unanimity that would have been quite inconceivable three years ago, to the distribution of bombs by aeroplanes upon German cities Does anybody believe that the spirit thus indicated is likely to remain a permanent national spirit of this country ? In the same way, we do not for a moment suppose that, if it should be found wise to day to control the action of certain women in certain military areas, or to recognise the existence of illicit coitus by instituting a system of supply to sailors and soldiers of prophylactic apparatus, we should be committed in the future to the lower state of public morals indicated by such methods These are some of the more important points which the National Council for Combating Venereal Diseases will have before them at their meeting on Monday next, and we feel sure that they will be debated frankly, and that no restraint will be put upon the expression of opinion by the allegation that to depart from a line of conduct hitherto followed is either to do ill with the illogical hope that good may come, or to display a cowardly inconsistency It requires knowledge to decide what an ill deed really is, and it requires courage to deal with facts which contravene an accepted course of procedure

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DURING the present war there have returned from the French front a very large number of officers and men who considered that their hearing had been damaged by gun fire or shell explosion The features of these cases differed from the familiar gunners' deafness of former times in that the damage appeared to be the result of a relatively short exposure to detonation, often to be the consequence of a single shell burst, and tended almost uniformly to recovery, sometimes sensibly complete, but in the majority of instances partial Tinnitus was not generally a prominent feature In the type case there was no visible damage. In addition to these cases there have been many of chronic or recurrent middle ear suppuration which we may put on one side, and a relatively small class with evidence of recent bursting of the membrana tympani. Within the experience of many observers these cases with manifest middle ear damage have escaped with a middle ear deafness only

The difficulties in classification and prognosis attach to the group which presents no evidence of local injury and with an apparent labyrinthine deafness, and they arise from the fact that with our present methods of testing hearing we have no sure means of distinguishing the two factors in hearing, the capacity of the peripheral instrument in the cochlea and the performance of the cortical organ of consciousness operating with this From the experience following the testing and watching of a large number of cases throughout the war, it would seem that the cortical factor may vary in intensity from a mere feebleness of concentrated attention to a total inhibition of any attention at all The more complete the inhibition, the greater the likelihood that recovery, if it takes place, will be sudden Deafness, however, rarely remains total, and the common history is that nothing at all can be distinguished for a few hours, that then hearing begins to return, but that after some few weeks it still remains defective, often more so in one ear than the other Further, some of these patients have experienced a greater or less degree of giddiness in the early stages, and some have vomited Finally there is, we believe, histological evidence that the cochlea may be extensively disorganised as the result of concussion by explosion, a condition which could hardly result in anything but total labyrinthine deafness If we put these points by the side of the fact that patients with burst membranes do not exhibit serious labyrinthine types of deafness, it is probable that there is in many cases a real labyrinthine factor in these deafnesses An interesting pair of cases, illustrating the extreme degree of suppression of cortical function, were recorded in THE LANCET of Oct 6th by Major A F HURST and Captain E A PETERS, who are to be congratulated on obtaining recoveries which might have been long delayed The employment of suggestion under light administration of an anæsthetic is well known, and in these cases the suggestion proved powerful We feel a little doubtful, however, of the desirability of the frequent use of the method, having a prejudice against any procedure which may lead in the long run to abuse, and a consequent lowering of the status of surgery We believe it likely, moreover, that any other powerful stimulus applied during the removal of the subconscious determination against hearing would have been as effective as suggestion proved The clinical points of interest seem to be the completeness of the suppression of reflex from the lower centres even in sleep, and the fact, in view of this, that the voice was not altered, showing that somewhere in the depths of consciousness there still lay hidden the appreciation of the patient's own voice As to the conclusion arrived at by Major HURST and Captain PETERS that an apparently total deafness associated with continued excitability of the posterior labyrinth is evidence of hysterical deafness, a doubt may reasonably be expressed, on the ground that two cases are quite an insufficient basis for such a generalisation, and on the further ground that cases of mild labyrinthitis occur in which there appears to be total deafness but in which the canal reflex can still be excited

The inquiry opened by Dr T B JOBSON, whose paper appears in another column, into the question of the effect of gun fire on the generality of men exposed to it and not aware of any resultant deafness, is an interesting one and worth, we think, further and much fuller pursuit At present the data appear to us to be altogether inadequate to furnish conclusions The apparent loss which Dr JOBSON found for a C2 fork, if this be a fairly heavy one, is not greater than will be found in a large proportion of average hospital patients, and appears to be largely due to the defect of training in attention, and this holds for both air and bone conduction It has further to be remembered that in any random sample of the adult population a sufficient number of really deaf ears will be present to furnish the proportion of larger defects. It would be interesting to know whether one ear, say the right, was uniformly tested before the other, and whether the tests were made singly or as the mean of several determinations. A further ground for doubting the conclusion arrived at is the general belief in the past that gun deafness is not at all an obstructive deafness, but of a purely labyrinthine type.

Annotations

"Ne quid nimis."

WOMEN AND A STATE MEDICAL SERVICE

THE subject of a Ministry of Health claimed the attention of the Medical Women's Federation at their recent conference in Manchester, and no dissent was expressed with Dr Jane Walker's view that such a Ministry was really coming and was to be welcomed in so far as it simplified the present cumbersome methods of various Government departments dealing with health matters. But a distinction was clearly drawn between such action and the merging of the personality of the general practitioner in a State Medical Service. Dr Catherine Chisholm dealt with the whole question as it affects medical women and their individual work. To the women of the country the woman practitioner has become a necessity in their lives, someone, that is, who knows the family intimately, its health, its position, and its difficulties, and who is a friend in need at times of trouble. Women are relying more on doctors of their own sex for themselves and their children, and Dr Chisholm foresees an ever increasing demand for medical women practitioners in all grades of social life. But the development of public health practice acts on the profession of medicine by women in many ways, for while such practice rivals general practice in interest, it provides posts with fixed salaries and regular hours, which may draw away numbers of women who would otherwise do general service among the people. The right solution for this perplexing situation Dr Chisholm sees in a better coöperation between the various phases of medical activity. While women should be encouraged to develop their medical work along the lines which most appeal to them, specialisation ought to follow on general experience and not commence at too early a stage in the career. The practical clinical work under the various departments of the Ministry of Health, such as maternity, child welfare and venereal treatment, should in her opinion be carried out by medical practitioners who have given evidence of special experience in these subjects rather than by whole time officers. At present these posts are often held by women with little, if any, general experience either of medicine or of life, with results which Dr Chisholm finds are disadvantageous to preventive medicine while promoting jealousy between it and clinical practice. Part time posts at all events in large centres are not open to the same objection, and if the practical encouragement of specialisation led to women of ability settling in sufficient numbers in areas where they are needed, the general public would be the gainer, and there would be a raising of the standard of the work done. On these grounds Dr Chisholm advises her colleagues in general practice to welcome the setting up of State subsidised treatment centres with laboratories attached, to be at the service of all practitioners, thus affording opportunities to the insured for specialised treatment. Women practitioners with special qualifications could then choose between private practice, or paid posts at the centres, or a combination of the two. Dr Chisholm's suggestions will command the careful consideration of the many keen women students entering the medical profession.

FUNCTIONAL CARDIAC AND PULMONARY TROUBLES ATTRIBUTABLE TO A LESION OF THE CARDIAC PLEXUS AND THE NERVES IN THE MEDIASTINUM.

AT a meeting of the Académie de Médecine of Paris M. Emile Sergent called attention to a lesion which the war has brought to light. He has observed a group of cases in which wounds of the chest are followed some time after recovery by respiratory difficulty, palpitation, and pains, and yet examination of the chest shows complete integrity of the heart, pericardium, lungs, pleuræ, and mediastinum, except perhaps for the presence on the screen of the shadow of a bullet in the region of the great vessels, in the zone of the cardiac plexus. Excluding nervous and hypochondriac patients, there remains a certain number of wounded, the reality of whose troubles cannot be doubted. M. Sergent's attention was first called to this group by the following case.

At the beginning of the war, in August, 1914, a man was wounded by a rifle-bullet which entered the chest 4 cm. above the left nipple, passed from before backwards, and lodged in the muscles of the back on the left side. After initial symptoms, such as loss of consciousness and hæmoptysis, he was considered cured and sent away convalescent. However, he continued to complain of constant oppression increased by the slightest effort, palpitation, and pains in the chest. M. Sergent saw him in November and found typical left phrenic neuralgia with immobility of the left half of the diaphragm, instability of the pulse which increased on the slightest movement, inequality of pupils (the left being in mydriasis), and preservation of the accommodation reflexes. Radioscopy showed complete integrity of the lungs, pleural cul-de-sacs, mediastinum, and movements of the heart, and confirmed the immobility of the left half of the diaphragm. There gradually developed hypertrophy of the thyroid gland with permanent tachycardia, tremor, and proptosis. Under high frequency currents and "hemato-ethyroidine," the symptoms of Graves's disease diminished at the same time as the other symptoms.

M. Sergent attributes these symptoms to lesions of the cardiac plexus and the phrenic nerve produced in the passage of the bullet. He regarded the supervention of symptoms of Graves's disease as supporting the theory which ascribes them to irritation of the sympathetic. His view was supported by 9 other cases of the same kind in which there was instability of the pulse and respiratory rhythm with constant dyspnœa, increased by the slightest effort. To these cardinal symptoms there was added in 3 cases phrenic neuralgia, inequality of pupils in 4, and symptoms of Graves's disease in 5. In all the region of the cardiac plexus was injured by a projectile which was shown either by its presence being revealed by radioscopy or by the position of its track. When the projectile is present the question of its removal arises. The surgeon must consider whether the risks of operation in such a region are not greater than those of unanimity that would have been quite inconceivable three years ago, to the distribution of bombs by aeroplanes upon German cities Does anybody believe that the spirit thus indicated is likely to remain a permanent national spirit of this country? In the same way, we do not for a moment suppose that, if it should be found wise to day to control the action of certain women in certain military areas, or to recognise the existence of illicit *coitus* by instituting a system of supply to sailors and soldiers of prophylactic apparatus, we should be committed in the future to the lower state of public morals indicated by such methods These are some of the more important points which the National Council for Combating Venereal Diseases will have before them at their meeting on Monday next and we feel sure that they will be debated frankly, and that no restraint will be put upon the expression of opinion by the allegation that to depart from a line of conduct hitherto followed is either to do ill with the illogical hope that good may come, or to display a cowardly inconsistency It requires knowledge to decide what an ill deed really is, and it requires courage to deal with facts which contravene an accepted course of procedure

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HEALTH OF BELFAST IN 1916

OUR Belfast correspondent writes —

'The annual report for 1916 of Dr W H Bailie, medical officer of health of Belfast, just issued, tells us that the death rate (calculated on a population as estimated by the Registrar General to the middle of the year of 390 000) was 16 7, which is the lowest ever recorded in the city The birth rate was 24 1—a decrease of 1 2 per 1000 as compared with the previous year—and is the lowest ever recorded In 1890, when it was highest, the birth rate was 35 5 per 1000 and there has been a steady drop since 1896, when it was 34 5 In 1895 with a population of 295,000, there were 9772 births, while in 1916, with a population of 390 000, the births were 9415, or a population of almost 100,000 more has yielded 357 fewer children Of the deaths of children under one year, 36 8 per cent were due to congenital debility, 17 3 per cent to diarrhœal diseases 15 9 per cent to bronchitis and pneumonia, 8 2 per cent to whooping-cough and measles, and 4 8 per cent to convulsions these being the principal causes of death It is satisfactory to note that the infantile mortality rate—113 deaths per 1000 births—shows a decrease of 24 per 1000 on 1915 Of the 6496 deaths registered during the year 1916 there were from diseases of the respiratory system 1176 (pneumonia 506 others 670), and from tuberculous diseases 1131 (phthisis 830, other forms 301), from cancer 332, from diarrhœa 236 (198 under two years of age, and 38 two years of age and upwards) from measles 191 from violence 147 from whooping cough 120 and from scarlet fever 52. There were 1067 deaths (that is, 16 4 of total deaths registered) under one year—namely, about one sixth of the deaths in Belfast in 1916 were due to infantile mortality Of the 1467 cases of infectious diseases notified, 969 were scarlet fever, and 650 deaths—a mortality of 1 7 per 1000 of the population—were caused by zymotic diseases (seven principal zymotic diseases) Out of the immense number of cases of scarlet fever 969, there were 52 deaths while 191 deaths were registered from measles and 120 from whooping cough It is noteworthy that the deaths from measles were 12 more than the notifications, and from whooping-cough 81 more these facts indicating the uselessness of any system of voluntary notification Pulmonary phthisis caused 830 deaths (that is 2 1 per 1000, an increase on the rate of the previous year, which was 2·0) yet owing to the absurd way the Tuberculosis Prevention (Ireland) Act 1908, was drawn, there were only 69 notifications of patients suffering from tuberculosis of the lung in 1916"

THE HEALTH OF THE ARMY IN 1913

AT the present time of writing the year 1913 seems to be a long way off, and what was of importance then can hardly be regarded with much interest under the circumstances of to-day There are certain duties, however, that have to be carried on whatever happens, and amongst these the continued preparation, collection, arrangement, and publication of statistical data may be reckoned as not the least important, though the difficulties to be overcome in the way of depleted staff and increased work—this often of a most urgent and peremptory character—must be considerable We feel that an acknowledgment is due to the War Office authorities for having prepared and issued the Report on the Health of the Army for 1913, which bears the marks of clearness, conciseness, and completeness that have distinguished its predecessors for more than half a century, and have made them statistical models for the corresponding publications of other Governments throughout the world

The volume now under notice will always have a special statistical interest as showing the health conditions of the Army immediately before the outbreak of the war—an epoch of profound historical importance

During the year 1913 the ratio of admissions to hospital was somewhat in excess of the corresponding figure for 1912, but the ratios for death constantly sick in hospital and invaliding were less than in any previous year The following table summarises the most important points in ratios per 1000:—

	Admissions	Constantly sick	Deaths	Invaliding
1889–1893	997 3	69 85	9 03	15 36
1899–1908	700·9	40·52	6 65	17 56
1908–1912	473 5	26 39	3 80	8 88
1912	426 3	23 72	3 26	8·25
1913	437 7	23 53	2 81	7 68

According to the system that has been in successful operation for some years men suffering from certain trivial affections are treated in barracks instead of being admitted to hospital If these slight cases (8 68 per 1000 constantly sick) be added to the hospital cases the total ratio comes to 32·21 a slight increase on the ratio (31 59) for 1912

The total strength of the Army amounting to 210 356 warrant and non-commissioned officers and men may be divided into three groups[1] half of the troops (105 659) were serving at home, the remainder were either serving in India (70 755) or in the various colonies and dependencies of the Empire (34 904) As compared with 1912, there is an increase in the admission rate to hospital for the whole force (437 7, compared with 426 3 per 1000) for India in the ratios for admission (590 5 compared with 547·9) constantly sick (29·68 instead of 28·86), and invalids sent home (7 49 instead of 6·68) and for the United Kingdom in the ratios for admission (357 4 compared with 346 4) invaliding (9 49 instead of 9 37) and death (2 60 compared with 2 34) The constantly sick ratio for home stations the death ratio in India, and all the ratios for the colonies are lower than in 1912.

Recruiting

The number of candidates for enlistment inspected from Oct 1st, 1912, to Sept. 30th 1913 was 42,977 compared with 47 008 in 1911–12, and an average of 58 079 in the decennium 1903–12 that is a decrease of 16,102. This decrease is attributed to increased competition by the Royal Navy, to continued activity in trade and emigration and to the facilities for getting work now provided by the Government Labour Exchanges also to increased care on the part of the recruiting sergeants in selecting men for enlistment The rejection ratio on medical examination which had averaged 301 per 1000 in the decennium 1903–12, was only 202·5 in 1912–13 The chief causes of rejection were defective vision (21·97 per 1000) loss or decay of teeth (21·08) under chest measurement (18·03) and disease or disorder of the heart The rejections for defective vision are practically the same as for the two years preceding though less than the decennial average (26·93) but for the last three years a considerable relaxation in the standard has been allowed For the right eye 6 6 is required and in the left eye the vision may be only 6 60 but in certain corps, if the *left* eye can see 6 6 the recruit would be accepted even with 6 60 in the right eye for employment as a driver Loss or decay of teeth causing 21·08 per 1000 rejections compared with 22 44 in 1911–12 and 54·62 in 1903–12, does not indicate an improvement in the teeth of the rising generation but merely means that recruits are now accepted even if they do *not* have "a sufficient number of sound teeth for efficient mastication" provided that they can receive "such treatment as would enable them to be passed as fit for enlistment." It is to be hoped that the attention that is now being paid to the condition of school-children's teeth throughout the country will lead to improvement in the teeth of the young adult generally Defective chest measurement caused only 18·03 per 1000 rejections as compared with an average of 47·05 in the preceding decennium The average minimum of those accepted was 33·2 inches and the average maximum 35·6 inches as compared with 33 4 and 35·7 for the decennium. Heart disease (or disorder) caused 28·67 rejections per 1000 of which 12 89 were ascribed to valvular disease the remaining 15 78 per cent. consist of cases of "disordered action" including tachycardia due to excessive smoking and fugitive functional murmurs Less importance is now attached to abstention. From the military standpoint these cases are important They indicate that in cases of wounds in this region, when neither auscultation nor radioscopy shows anything abnormal, the conclusion that the patient is exaggerating or simulating should not be hastily adopted

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[1] The statistics in this Report refer to conditions prevailing before the war

A SCHEME FOR A MINISTRY OF HEALTH

A MEMORANDUM presented by the National Insurance organisations of the country and printed by the Insurance Publishing Company, Limited (price 4½*d*), *contains a concrete* scheme for the establishment of a Ministry of Health and for the transference to it of functions hitherto discharged by various Government Departments The main points of the scheme are as follows —

1 A Bill to be brought in at the beginning of the autumn session which shall establish a Ministry of Health in charge of a Minister of Cabinet rank, with the specific duty of securing proper health measures and conditions throughout England and Wales

2 The Bill to transfer from the outset to the new Ministry all the functions, other than judicial and quasi judicial, of the Insurance Commissioners for England and for Wales, the excepted functions being transferred to a special body to be set up by Order in Council

3 To transfer also to it from the outset all the more directly medical functions of the Local Government Board under the Public Health Acts, and at a later stage its other functions under those Acts, but none of its functions under the Poor law until certain other changes have first been made

4 To transfer also to it from the outset the functions of the Board of Education as regards maternity and infant welfare, and later on in respect of crèches

5 To transfer to it from the outset the functions of the Privy Council in respect of Midwives, and, later on, its other medical or analogous functions

6 To transfer to it at a later stage the functions of the Registrar General, certain functions of the Home Office, and those of the Board of Control for Lunacy

The suggested Bill is to be accompanied by Exchequer grants to be disbursed by the new Ministry for promoting health schemes of local authorities The memorandum urges the Government to press on with legislation so that the scheme may come into effective practical working by the beginning of 1918 However improbable may be the immediate realisation of such a scheme and all that it entails, we welcome the clear statement of the aims of the Approved Societies as a basis for discussion

PARAFFIN AND AMBRINE IN THE TREATMENT OF WOUNDS

THE method recently brought forward by Barthe for burns and frost-bites by the use of ambrine is a rational method of treatment for wounds in general, inasmuch as it affords an absolute protection for young epithelium The special properties which its originator claimed for ambrine were a definite melting point a definite rate of cooling, tolerance of the tissues to its heat, and its retraction on cooling Professor Masnata having made extensive experiments as regards the relative physical properties of ambrine and pure paraffin having a melting point between 50° and 52° C, has come to the conclusion that the therapeutic properties of ambrine are due entirely to the paraffin[1] He found that the paraffin formed a covering round wounds which adapted itself to the most minute sinuosities, protecting them efficiently and keeping them immobile The excellent results obtained by this method, he says, must be attributed to this property of paraffin of adapting itself to the tissues without adhering to them, so that when the dressing is removed there is no lesion to the superficial granulations nor the least trace of blood The secretions find their way along the internal surface of the paraffin layer and are absorbed by the gauze at its edge The absence of any irritation or injury to the wound facilitates to a marked degree the proliferation of epithelium, rendering the use of nitrate of silver to reduce exuberant granulations unnecessary Professor Masnata made use of paraffin in a very similar manner to that advocated by Dr Barthe for ambrine The paraffin, which should have a melting point of 50° to 52° C, is liquefied in a porcelain dish and raised to a temperature of 120°–150° for sterilisation, it is then poured into a *bain marie* and cooled to 70°–80° C, and kept at this temperature during use After the wound has been cleansed with sterilised gauze and warm water it is dried, preferably by a current of hot air from an electric apparatus, and then, by means of a large soft brush which has been sterilised by immersion in the heated paraffin, a layer is gently applied all over the surface Absorbent wool and bandage complete the dressing After dressings are made every 24 hours or every two days, according to the amount of secretion, removal is easy as the layer of paraffin comes away with the wool and does not stick either to the skin or to the wound.

A NOMENCLATURE OF SMELLS

A CORRESPONDENT asks, Is there no genius prepared to give us a nomenclature of smells? and, referring to a paper on "Wound Treatment" in our columns, suggests that it ought to be possible to name a wound smell, and so to obviate the despatch of samples An approach has been made many times, but with little success, to the establishment of a system of nomenclature comparable for smells with the classification which we have been able to set up in the cases of the senses of seeing and hearing The fact is that, so far, smells have not been capable of the analysis which is possible with light and sound In both these cases we have a gamut or a law of octaves, as also with the atomic weights in chemistry, and perhaps some day a similar analysis in regard to odours will be forthcoming At present we are without a nomenclature, and everybody experiences the difficulty of describing a smell We have to be content to say that a given smell resembles another smell which is more or less familiar The fact is that the sense of smell has been the least cultivated of the senses, and it is just possible that if the subject had received the same attention as have the senses of hearing and sight the study of odours would have reached a higher scientific plane, though, it appears to us, the classification of smells must always suffer from the absence of the mathematical analysis capable in optics and acoustics As it is, in our struggle to describe a smell we are confined to using such terms as peculiar, persistent, pleasing, disagreeable, sour, bad, musty, sickly, and so forth Now these are all adjectives which give us little enlightenment We appreciate at once what is the colour of an object called red, and when we fall back on the reference to common objects, for the and the prolongation of the hot weather into November" 56 cases were found to be of the malignant tertian type In Peshawar 134 cases were of this type It is stated that larvæ of M culicifacies were found in the fire-tanks at the arsenal at Pindi and that at Lahore anopheline mosquitoes were numerous, also that numerous water channels with general water logging of the soil foster their breeding anophelines are abundant at the brickworks within half a mile of the barracks At Karachi also the admission rate (359 9 per 1000) greatly exceeded that of 1912 the battalion chiefly affected occupied lines through which runs a large *nullah* in which a great deal of water lodges in the rains" All these excessive prevalences of malaria are therefore explained but no explanation is afforded how it happened that such well known fever producing conditions were allowed to exist in the year 1913 It is stated that the work of reducing the breeding places of anophelines is tedious exacting and requires unremitting attention and supervision and in the absence of radical and prohibitively expensive operations it has to be carried out year after year" Proximity to bazaars and lack of active coöperation on the part of the civil authorities also tend to neutralise prophylactic measures in cantonments There seems to be a note almost of despair in regard to the whole matter It would appear that some vigorous action on the part of Government is required to compel the civil authorities" to put a stop to the propagation of disease amongst the British troops—that is, to prevent the latter being poisoned by the insanitary conditions prevalent in the civil areas The question of the provision of mosquito nets presents many difficulties Except in a few places nets are not provided by Government. .. In several reports it is stated that the punkah coolies were infected with malaria in one station (Fort Govingarh Amritsar) 84 per cent were so infected" Electric fans are recommended so that the cooly may be eliminated The survey of malarial stations with a view to systematic eradication of malarial conditions is required There are instances of stations where formerly malaria was both prevalent and malignant in which it is now so mild as not to call for quinine prophylaxis"

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[1] Policlinico Surgical Section June 15th 1917

In contrast with the unsatisfactory condition of matters in regard to malaria prevention may be mentioned the absence of plague and the practical absence of cholera (5 cases 1 death) and small pox (14 cases 1 death) There were 746 cases of dengue 310 cases occurring at Ambala at three stations it was suggested that *Stegomyia calopus* may be a carrier but at Dinapur the most careful use of mosquito-nets at night did not stop the spread of the disease

OTHER STATIONS ABROAD

In Egypt, where the force numbered 5618, the admission ratio (415·5) and the ratio of constantly sick (23 85) were both considerably below the quinquennial averages of 568 1 and 36·95 per 1000. The death rate (3 74) was also less than the average (3·93) Most of the troops are stationed in Cairo There were only 6 cases of enteric fever (all in Cairo) one of whom was an orderly of the Royal Army Medical Corps who had been nursing an enteric patient. There were five cases of Mediterranean fever the cause could not be traced only tinned milk is used by the troops In 1912 there had been 39 cases of *Bilharzia hæmatobia* infection, which caused the invaliding out of the service of 19 men It was suspected that infection came from the use of the floating bath in the Nile This was discontinued shower baths being substituted In 1913 the garrison was quite free from the disease. Beri beri appeared for the first time in this command there were 17 cases all in the Welsh Regiment with 1 death The outbreak died down as soon as improvements were made in the vegetable ration In Gibraltar and Malta the health of the troops was satisfactory There were no cases of Mediterranean fever at Gibraltar and in Malta there were only three two of whom admitted drinking goats milk In South Africa the strength of the garrison was reduced from 10 488 in 1912 to 6703 in 1913 the stations of Harrismith and Tempe being no longer occupied All he ratios are higher than in 1912, and all (except the admission rate) are higher than the quinquennial average (1903-12) this is stated to be due to the excessive prevalence of venereal disease For the whole command the venereal admission ratio was 70 7 in the Cape peninsula the ratio was 195·2 per 1000 and at Wynberg 42 2 per cent of the admissions to hospital and 54 9 per cent of the average constantly sick were due to this cause The total admission ratio for South Africa was 353·9 the average constantly sick 24 69 the deaths 3 88, and the invaliding 17 45 per 1000; the corresponding ratios for 1903-12 were 355 3 21·04 3 77 and 5·97 per 1000 In West Africa, Bermuda Ceylon South China, Jamaica, Mauritius, and the Straits Settlements the health conditions have been on the whole satisfactory with less sickness than in recent years this has been particularly noticeable in Bermuda Jamaica Mauritius and the Straits Settlements In North China the admissions (649 8) invaliding (11 89) and average constantly sick (45 33) have been in excess of the quinquennial average due chiefly to malaria (103 3 admissions per 1000) and venereal disease (246 4)

The report is somewhat late in its appearance but considering the conditions that prevail at the present time the authorities are to be congratulated on having succeeded in producing it at all It is a model of clearness of arrangement and accuracy in printing and will be of permanent historic value as exhibiting the health conditions of the British Army immediately before the outbreak of the European War after the conclusion of which there may be great changes in matters military and medical as well as in the map of Europe

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SURGEON GENERAL SIR PARDEY LUKIS's term of office as Director General of the Indian Medical Service has been further extended for one year to Dec 31st 1918 when he will have occupied this high office for nine years

A HEALTH visitor has just been appointed at Camborne (Cornwall) by the local urban council The infant mortality rate in the district is stated to be 30 per cent higher than the average rate for England and Wales

Correspondence.

"Audi alteram partem"

MALARIA CONTRACTED IN ENGLAND

To the Editor of THE LANCET

SIR,—In your issue of last week is an account of a case of malaria said to be contracted in England In reading the description of the case the evidence for deducing that the infection was contracted in England seems to be totally inadequate The patient was in Salonika, a noted centre for malarial infection, last year, and there seems to me every reason for supposing that the infection was contracted there and the attack which he has recently had is only a relapse of the old infection.—I am, Sir, yours faithfully,

H. B NEWHAM, M D Durh, M R C P Lond,
Director London School of Tropical Medicine Royal Albert Dock, E
Oct 8th 1917

THE STATUS AND FINANCIAL POSITION OF THE LONDON LOCK HOSPITALS

To the Editor of THE LANCET

SIR,—A great deal of misapprehension seems to exist in both medical and lay minds regarding the position of the London Lock Hospitals so, at the request of the board, I have been desired to write asking you to be so kind as to insert this explanatory letter in the hope that it will clear away any misconception that may exist

The Male and Female Lock Hospitals, which were founded in 1746 have been the principal centres for the treatment of venereal diseases in England since that date and on the coming into force of the Venereal Diseases Regulations 1916 the Lock Hospital immediately applied for approval under the new scheme This was granted by the Local Government Board at the close of last year and a grant-in aid is now received at both institutions towards the work being done, but the Lock Hospitals have always dealt with large numbers of cases, in addition to those treated within the London County Council area, and experience has proved during the last nine months that more than ever is the hospital called upon to deal with cases of venereal disease that do not come within the scope of the new scheme, which, it must be remembered, only applies to venereal diseases in their early and communicable stages

After allowing for the grant-in aid referred to above the hospital has to raise in voluntary contributions a sum estimated at over £9000 per annum, and the board earnestly desire that the medical and the lay public should realise the true position of the Lock Hospitals at the present time when an idea appears to exist that the hospitals are entirely supported by grants from the Local Government Board an impression which may seriously damage any efforts to obtain the necessary funds to carry on the important work at both institutions —I am Sir, yours faithfully,

J ERNEST LANE
Major R.A M C Member of the Board of Management and
Chairman of the Medical Committee
London Lock Hospital and Rescue Home, Harrow road
London W Oct 4th 1917

BREAST-FEEDING AND THE NERVOUS INFANT

To the Editor of THE LANCET

SIR,—Dr H Waller writes kindly, in your issue of Sept 22nd, on my note on nervous unrest in the newly born but disagrees He will have nothing to do with my views that in many babies digestion and appetite and the power of suction are all inhibited by excessive crying and emotional display with its accompanying vasomotor changes and the setting free of internal secretions He is clearly right when he urges that a complete physical examination of the child should be made to search for any cause for the failure to nurse but he does not appear to appreciate that in saying so he is only restating the main contention in my papers I drew up a long list of such causes to be found in the child—and in it I included Dr Waller's example of birth trauma—but added later that in many children no such cause was to such conditions and there are *consequently likely to* be fewer rejections under these headings Of the whole body of recruits finally accepted (excluding those under 18) the average age was 19 7 years height 66 2 inches minimum chest measurement 33 2 inches *maximum* chest measurement 35 6 inches range of expansion 2 6 inches and weight 127 7 lb These figures are practically the same as the average of the decade 1903-12. The standard was therefore being maintained It is stated however that many recruits enter in very poor condition and until they have been well fed for a short time and given moderate exercise they are quite unfit for their work on the square or in the gymnasium With plenty of good food and careful physical training by graduated exercises the improvement is very great being shown in a general way by the look of health and smartness of bearing and especially by the rapidity with which the pulse-rate returns to normal after exertion and by the manner in which backward recruits become alert

Invaliding

The ratio for invaliding out of the service was 7 88 per 1000 contrasting favourably with the preceding quinquennial average of 8 88 (1908-12) The most important classes of disease rendering a man unfit for service were as usual those of the nervous system (1 42 per 1000) especially epilepsy (0 62) and melancholia (0 18 per 1000) of the circulatory system (1·02) and tuberculous affections (1 31) These ratios are however, less than the quinquennial averages for the nervous and circulatory diseases (which had been 1 61 and 1 38 respectively) but slightly in excess of the tuberculous figure (1 29) for the preceding five year period Only 27 men were invalided for syphilis (0 12 per 1000) The average for 1908-12 was 0 21 and for 1892-1901 it was 1·26 per 1000 The beneficial *effects of modern methods of prevention* and treatment are obvious

Vaccination

During 1913 *there were* 4219 *children in Army* families vaccinated primarily (at home and abroad) with a percentage success of 91 3 of these 2685 received lymph from a Government establishment giving a percentage success of 97 1 There were also 1197 children revaccinated with a total percentage success of 76 6 with Government lymph this was 94 1 The recruits revaccinated with Government lymph numbered 16 875 with a percentage success of 91 4 in addition 19 were vaccinated from other sources with 84·2 per cent success The soldiers revaccinated numbered 14 982 of whom 3820 with Government lymph gave a percentage success of 86 2 while for 11,162 revaccinated from other sources the corresponding ratio was 51 7 per cent It is obvious from these figures that revaccination of the young adult is absolutely necessary to afford protection It also appears to be the case that infant vaccination is often inefficient otherwise revaccination of children (with Government lymph) would not give a successful percentage of 94 1

HEALTH OF THE TROOPS IN THE UNITED KINGDOM

The following short table shows the improvement that has taken place of late years in the health of the Army at home The figures are ratios per 1000 —

	Admissions.	Constantly sick	Deaths	Invalids
1889–98	712·5	41 14	4 32	16 98
1908–12	368·9	21 13	2·53	10 64
1912	346 4	19 50	2 34	9 37
1913	357 4	19 16	2·60	9 49

The slight cases of sickness treated in barracks averaged 7 10 per 1000 constantly sick in addition this combined with the hospital ratio gives 26 26 being 0·48 per 1000 less than in the previous year It seems probable that there will be little if any further reduction in the amount of sickness *or invaliding or in the death rate of the troops* serving at home

The admissions were highest in the London district (480 5 per 1000) and lowest in the Scottish Command (208 1) the average number constantly sick was also highest in London (28 89) and was lowest in the Western Command (10 62) Comparing the different arms of the Service the Household Cavalry have the highest admission rate (695 7) and the Foot Guards the greatest number constantly sick (27 61) For the infantry of the Line the corresponding ratios were 381 9 and 20·93 per 1000 The diseases causing most mortality at home were pneumonia (with 26 deaths) pulmonary tuberculosis *(25 deaths)* and appendicitis (13 deaths) The greatest amount of inefficiency from sickness was caused by venereal disease (4·57 per 1000 forming 23 9 per cent. of the *total)* but both actually and relatively there is an improvement on the preceding year and on the quinquennium the chief causes for invaliding out of the Service were tubercular disease (1 46 per 1000 of which 1 29 was pulmonary), nervous diseases (1 01) and valvular heart disease (0·93 per 1000)

INDIA

The strength of troops serving in India during 1913 averaged 70 755 warrant officers non-commissioned officers and men Their health continued to be satisfactory as is shown in the following abstract of ratios per 1000 of strength —

	Admissions	Constantly sick.	Deaths	Invalids
1889-98	1464 7	89·61	16 43	27·95
1908–12	638 5	35·03	6 02	9·19
1912	547·9	28 86	4·62	6·68
1913	580 5	29 68	3 26	7 49

There is a slight increase in the admission ratio over the preceding year (as there had been in 1912) and the constant inefficiency from sickness and the invaliding are practically the same as before but the death ratio shows a marked improvement, as is the case in all particulars compared with the quinquennial average *the improvement is* still more noticeable on comparison with the statistics of the decennium before the South African War The admissions are about two-fifths the constantly sick *one-third the invalidings* little more than one quarter and the deaths less than one-quarter of the average 1889-1893 With regard to the increase in the admission ratio compared with the three preceding years it is stated that there has been a prevalence of malaria sandfly fever and dengue in the Northern Army and that a large number of cases of ear disease have been admitted to hospital that would formerly have been treated as out-patients in barracks

There were three large stations that showed very high admission ratios—Lahore (1252 2 per 1000) Rawal *Pindi* (1127·9) and Peshawar (1007) The average numbers constantly sick were also high in these stations the figures being 44 68 44 00 and 38·65 per 1000 respectively The death rate was *high in Rawal* Pindi (5 36) moderate in Lahore (3 49) and extraordinarily low in Peshawar (1 death = 0 59 per 1000) The highest death rates at large stations with over 1000 troops were experienced at Fort William (8 39) Rangoon (7 81) and *Karachi (6 24)*

The disease that caused the greatest number of admissions has been as always malarial fever (125 5 per 1000) This is less than the quinquennial ratio (1908–12) of 149 5 but higher than the figure for 1912, which was 82 4 per 1000 Sandfly fever (28·9) was rather less prevalent than in 1912, when the ratio was 30 5 The quinquennial average was 11 4 Pyrexia of uncertain origin caused only 15 6 admissions per 1000 a great reduction on the quinquennial average of 43·9 due presumably to more accurate diagnosis It is stated (p. 44) that the term is used to include practically all pyrexial states that cannot be *clearly designated in any other way* the duration of the fevers so classified varying from days to months Under this head are probably embraced undiagnosed enteric, paratyphoid sandfly and malarial fevers influenza, gastro-intestinal disturbances &c For *malaria, sandfly* fever and pyrexia of uncertain origin, the total admission ratio was 170·0 per 1000 in 1913 and 204·8 in the preceding quinquennium Venereal diseases caused 52 5 admissions per 1000 compared with 61·0 in the preceding quinquennium: the average number constantly sick that is the inefficiency due to these affections was 6·90 per 1000 compared with 7 85 in the quinquennium there is a continuous improvement, and when the statistics of former years are referred to the condition of things is seen to be altogether different: the average venereal admission rate in the decennium 1889–1898, was 383·8 per 1000 and the *average number constantly sick was 32·81 per 1000* The most fatal diseases were enteric and paratyphoid fevers (0 26 deaths per 1000) inflammation and suppuration of the liver (0 24) and pneumonia (0 23 *per 1000)*

Although enteric fever is of nothing like the same importance nowadays as was formerly the case in India, when (as in 1898) it accounted for 50 per cent. of the deaths occurring among British troops (2375 cases and 654 deaths, the ratios being 36 3 and 10·0 per 1000 respectively) it still holds the highest place in the mortality table There were 85 cases and 16 deaths in addition, there were 79 cases of paratyphoid A with 2 deaths For both together the admissions numbered 164 and the deaths 18 the combined ratios being 2 3 and 0·26 per 1000 The Report states that *there were fewer cases of* enteric fever and a lower *mortality from that disease in 1913 than in any previous year* This diminution is more striking than at first sight appears for with modern methods of diagnosis it is probable that a smaller proportion of cases of both enteric fever and paratyphoid fever escape detection " The improvement was still continuing In the previous year (1912) there had been 118 (or including paratyphoid A and B 182) cases and 28 deaths giving ratios per 1000 of 1 7 (or including paratyphoid 2 7) admissions and 0 40 deaths

Of the 85 cases of enteric fever in the whole army in India 67 were admitted from three out of the ten divisions that compose the European Army in that country—viz: *27 from Rawal Pindi 18 from* Poona and 12 from Secunderabad From Lucknow there were admitted 35 cases of paratyphoid A, but only 6 of enteric; and from *Poona came 13 cases of paratyphoid* A In the Rawal Pindi division 13 out of the 27 cases occurred in Rawal Pindi itself There were 4 cases in September and the remainder were spread over the rest of the year It is stated that it was found impossible to trace the source of origin of any of the 13 cases no carrier was discovered Eight cases occurred in the 21st Lancers recently arrived from Egypt, where they had been seriously affected with enteric in the preceding year In the same division 9 cases occurred *at Sialkot* no cause could be traced Of the 18 cases in the Poona division 11 occurred at Poona itself There were 79 admissions for paratyphoid *fever with only two deaths There were no* cases in Rawal Pindi The principal prevalence was in Lucknow Fyzabad and Kamptee all cases were due to *B paratyphosus A* this organism being detected either in the blood fæces or urine All of these 79 cases (except one) had been inoculated against enteric *fever* Trials were subsequently made with an antiparatyphoid vaccine prepared at the Royal Army Medical College It is stated that evidence is accumulating that the indigenous population *suffer from* paratyphoid fever to a certain extent and that it is probably more or less endemic in the country The need for bacteriological examination of all servants and followers is now getting *to be recognised* Anti enteric inoculation progresses satisfactorily over 93 per cent of the European troops having been so treated and in some units every officer and man has been inoculated All native cooks mess servants and others engaged in handling food are now inoculated as a matter of routine. The admission and death ratios per 1000 for enteric fever among the inoculated soldiers are 0·9 and 0 12 of inoculated strength respectively Among the non inoculated soldiers these *ratios are 5 3* and 1 76 of non inoculated strength Combining enteric and paratyphoid fevers the inoculated ratios are 2 10 and 0·15 and the non inoculated ratios 5 50 and 1 76 respectively *Re-inoculation* is recommended after two years The important statement is made that some infantry battalions have not had a case of enteric for over two years and it has been ascertained that in these units Indian cooks are not employed and inoculation has been adopted by all ranks almost universally " The conclusion is arrived at on a survey of all the circumstances that the progressive decline in the prevalence of the disease is due to the high proportion of men protected by anti-enteric *inoculation* the detection of carriers in barracks the elimination of convalescents by sending them to special enteric depôts in the hills the practice of night soil incineration and *consistent effort in improving* the sanitary condition in barracks and their surroundings There can be no gainsaying such a conclusion it is comprehensive and fairly obvious for the present apparently there can be no relaxation of vigilance either in general sanitary measures or in the special prophylactic *methods employed*

Malaria continues to be the dominating cause of inefficiency in European troops in India." The ratio of admissions per 1000 was highest in the Rawal *Pindi (223 1) and Peshawar* (274·6) divisions in Pindi itself the admissions were 564 7 per 1000 the increased incidence is attributed to the presence in and about the cantonment of a heavily *infected indigenous community* the intermittency of the rains and the prolongation of the hot weather into November " 56 cases were found to be of the malignant tertian type. In Peshawar 134 cases were of this type It is stated that larvæ of *M culicifacies* were found in the fire-tanks at the arsenal at Pindi and that at Lahore anopheline mosquitoes were numerous, also that numerous water channels with general water logging of the soil, foster their breeding anophelines are abundant at the brickworks within half a mile of the barracks At Karachi also the admission rate (350·9 per 1000) greatly exceeded that of 1912 the battalion chiefly affected occupied lines through which runs a large *nullah*, in which a great deal of water lodges in the rains " All these excessive prevalences of malaria are therefore explained but no explanation is afforded how it happened that such well known fever producing conditions were allowed to exist in the year 1913 It is stated that the work of reducing the breeding places of anophelines is tedious exacting and requires unremitting attention and supervision and in the absence of radical and prohibitively expensive operations it has to be carried out year after year Proximity to bazaars and lack of active cooperation on the part of the civil authorities also tend to neutralise prophylactic measures in cantonments. There seems to be a note almost of despair in regard to the whole matter It would appear that some vigorous action on the part of Government is required to compel "the civil authorities" to put a stop to the propagation of disease amongst the British troops—that is, to prevent the latter being poisoned by the insanitary conditions prevalent in the civil areas. The question of the provision of mosquito nets presents many difficulties Except in a few places nets are not provided by Government. .... In several reports it is stated that the punkah coolies were infected with malaria in one station (Fort Govingarh Amritsar) 8[illegible] per cent were so infected " Electric fans are recommended, so that the cooly may be eliminated The survey of malarial stations, with a view to systematic eradication of malarial conditions is required There are instances of stations where formerly malaria was both prevalent and malignant in which it is now so mild as not to call for quinine prophylaxis "

In contrast with the unsatisfactory condition of matters in regard to malaria prevention may be mentioned the absence of plague and the practical absence of cholera (5 cases 1 death) and small pox (1[illegible] cases 1 death) There were 7 8 cases of dengue 310 cases occurring at Ambala at three stations it was suggested that *Stegomyia calopus* may be a carrier but at Dinapur the most careful use of mosquito-nets at night did not stop the spread of the disease

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In Egypt, where the force numbered 5818, the admission ratio (415·5) and the ratio of constantly sick (23·86) were both considerably below the quinquennial averages of 5[illegible]6 1 and 36·96 per 1000 The death rate (3 74) was also less than the average (3·93) Most of the troops are stationed in Cairo There were only 6 cases of enteric fever (all in Cairo) one of whom was an orderly of the Royal Army Medical Corps who had been nursing an enteric patient. There were five cases of Mediterranean fever the cause could not be traced only tinned milk is used by the troops In 1912 there had been 39 cases of *Bilharzia hæmatobia* infection, which caused the invaliding out of the service of 19 men. It was suspected that infection came from the use of the floating bath in the Nile This was discontinued, shower-baths being substituted. In 1913 the garrison was quite free from the disease. Beri beri appeared for the first time in this command there were 17 cases all in the Welsh Regiment with 1 death The outbreak died down as soon as improvements were made in the vegetable ration. In Gibraltar and Malta the health of the troops was satisfactory There were no cases of Mediterranean fever at Gibraltar and in Malta there were only three two of whom admitted drinking goats milk In South Africa the strength of the garrison was reduced from 10[illegible]73 in 1912 to 6703 in 1913 the stations of Harrismith and Tempe being no longer occupied All the ratios are higher than in 1912, and all (except the admission rate) are higher than the quinquennial average (1908-12) this is stated to be due to the excessive prevalence of venereal disease For the whole command the venereal admission ratio was 70 7 In the Cape peninsula the ratio was 158·2 per 1000 and at Wynberg 42·2 per cent. of the admissions to hospital and 5[illegible]9 per cent of the average constantly sick were due to this cause. The total admission ratio for South Africa was 353·9 the average constantly sick 24·89 the deaths 3 23, and the invaliding 17[illegible]5 per 1000 the corresponding ratios for 1908-12 were 355 3 21·04 3·77 and 5[illegible] per 1000 In West Africa, Bermuda Ceylon South China, Jamaica, Mauritius, and the Straits Settlements the health conditions have been, on the whole, satisfactory with less sickness than in recent years this has been particularly noticeable in Bermuda, Jamaica Mauritius and the Straits Settlements In North China the admissions (6[illegible]9·8) invaliding (11·8[illegible]) and average constantly sick ([illegible]5·33) have been in excess of the quinquennial average due chiefly to malaria (103 3 admissions per 1000) and venereal disease (2[illegible])

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Director London School of Tropical Medicine Royal Albert Dock, E
Oct 8th, 1917

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BREAST-FEEDING AND THE NERVOUS INFANT

To the Editor of THE LANCET

SIR,—Dr H Waller writes kindly, in your issue of Sept 22nd on my note on nervous unrest in the newly born, but disagrees He will have nothing to do with my views that in many babies digestion and appetite and the power of suction are all inhibited by excessive crying and emotional display with its accompanying vasomotor changes and the setting free of internal secretions He is clearly right when he urges that a complete physical examination of the child should be made to search for any cause for the failure to nurse but he does not appear to appreciate that in saying so he is only restating the main contention in my papers I drew up a long list of such causes to be found in the child—and in it I included Dr Waller's example of birth trauma—but added later that in many children no such cause was to be found, and that the difficulty was then to be accounted for by the unstable nervous system of the child Dr Waller does not believe it, yet I feel sure that when he expounds the physiology of digestion to workers in infant welfare, he does not omit reference to the teaching of Pawlow on the dependence of gastric secretion upon the emotions or substitute for it entirely his own views upon the ill effects of giving the mother an enema or a dose of salts

When a baby after birth, has dyspepsia, cries ceaselessly and passionately, mothers and nurses are quick to blame some article of diet or some medicine the mother has been given To them it admits of no doubt that the milk disagrees with the child because it contains something harmful I do not believe that there is often truth in this contention. The same milk can be used for another child without ill results The disturbance is in the child It was the hope of upsetting a little the belief in these traditional views, to which Dr Waller calls my attention, that made me write as I did With him at least I have failed. He even adds to my confusion by detailing these observations of his own upon the toxic properties of milk derived from mothers who have had an enema or who have carious teeth

I am, Sir, yours faithfully

Devonshire-place, W Oct 2nd 1917 H CHARLES CAMERON

THE DIAGNOSIS OF HORSESHOE KIDNEY

To the Editor of THE LANCET

SIR,—I am induced by Dr David Newman's article entitled " Horseshoe Kidney Diagnosed Prior to Operation," which appeared in THE LANCET of August 18th, to send you this brief note Evidently it was not known to the author that in December, 1915, I determined, *exclusively* by radiological investigation, the diagnosis of horseshoe kidney in a case where the condition was confirmed by the operation At the same time I described the complex of radiological symptoms of this abnormality, which were unknown up to that moment, and fixed the typical image of it (*vide* the report of the Dutch Society for Electrology and Roentgenology of May 21st, 1916, in the *Nederlandsch Tijdschrift voor Geneeskunde*, 1916, ii , p 1250)

Dr Newman could not be aware of my case, for on account of the war the international publication of my paper, which will appear in the next number of the *Journal de Radiologie*, was retarded I am, Sir, yours faithfully,

Amsterdam, Sept. 28th 1917 N VOORHOEVE

THE EFFECT OF PITUITRIN ON BLOOD PRESSURE

To the Editor of THE LANCET

SIR,—Dr Edith M N Green's article on blood pressure and surface temperature in 110 cases of shell shock in your issue of Sept 22nd has a bearing on other conditions in which arterial pressure is depressed, and the charts and other records tend to confirm the value of pituitary extract in some of these conditions

Dr Green's paper would be of enhanced value if she would kindly inform your readers (1) Whether ' blood pressure " is intended to signify systolic pressure (2) whether the diastolic pressure was taken in any of the cases, (3) whose make of pituitary remedy was used, so as to give a clearer signification to " pituitary fluid " and extract , and (4) whether the whole gland or the posterior or anterior lobes alone, were made use of.

I am, Sir, yours faithfully,

Devonshire-place W Oct 1st 1917 R HINGSTON FOX.

A STATE-AIDED MIDWIFERY SERVICE

To the Editor of THE LANCET

SIR,—In referring to your article in THE LANCET of Sept 29th on the memorandum for State aided midwifery put forward by this association, may I point out that there has apparently been some little confusion between the proposals of this association and the scheme so ably thought out by Dr E W Hope, of Liverpool ?

Dr Hope, in his admirable address at the meeting of this association in July spoke of the success of the efforts of the State to improve the position of the midwife, but that it was necessary to go much further, and it is with the hope of covering the whole field (with the welfare of the mother and child as the first objective) that the memorandum issued by this association has been formulated It is estimated that its provisions will cost the country a million a year (not £100,000), but this sum would, undoubtedly, be repaid over and over again if they secure to every mother the skilled attention necessary for the well being of herself and her child I am, Sir, yours faithfully,

EMILY F FORD,

Secretary Association for Promoting the Training and Supply of Midwives

Dacre House Westminster, S W , Oct 3rd 1917

*** Having read again the proposals put forward by the association for a State aided midwifery service, we see how we were led to mistake our previous correspondent's accurate notes We are glad to publish Miss Ford's correction — ED L

THE TREATMENT OF IMPETIGO AT THE FRONT

To the Editor of THE LANCET

SIR —Impetigo and its treatment is a considerable source of difficulty to the medical officer in charge of a unit on active service Especially does this apply to artillery units, which are sometimes many weeks in the "line " Under these circumstances it is very difficult for the men to obtain baths and clean underclothing In consequence a fair number of men get impetigo I tried various remedies, such as the unguentum hydrargyri ammon , ung acid. borici, covering the affected parts with plain lint afterwards The results were disappointing Then tinct iodi painted on the affected parts and afterwards covering the area, as in the former treatment, with plain lint This certainly gave considerably better results

The best results, however, have been obtained by using methylated spirit The procedure adopted was first of all to remove the crusts with boric fomentations, and then swabbing the area affected by impetigo with methylated spirit Within a few days the relief was very marked All the affected parts were covered with plain lint, secured in position either with a bandage or strapping

I thought the above treatment would interest your readers, especially those who are on active service on the Western Front —I am, Sir, yours faithfully,

FRANK HARVEY,

In the Field, Sept 3rd 1917 Captain R.A M C (T)

COLOUR WARDS IN HOSPITALS

To the Editor of THE LANCET

SIR,—With regard to the end of the annotation in your issue of last week on the use of colour in hospital wards I shall be pleased to supervise colour schemes for any hospital in London or other town I do not take any money for such supervision I am, Sir, yours faithfully,

H KEMP PROSSOR.

11 South Eaton place S W Oct. 8th 1917

Corrigendum —In the address at the foot of Mr Edred M Corner s letter in our last week s issue, calling attention to a War Memorial for Old Epsomians, a figure has broken off It should read *37* Harley street

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THE COLLEGE OF AMBULANCE —The Bishop of London, who presided at the opening of the fourth year of the work of the college on Monday, Oct 8th, announced the offer of what he termed a 'parsons' ambulance" for the front line service Incidentally Dr Ingram mentioned the experience of a rescuing party of 50, including his own chaplain, who were out for 4½ hours in a heavy barrage and succeeded in bringing in, without one of the rescuing party being hit 12 men who had lain out for three days and three nights On the motion of Sir Malcolm Morris seconded by Professor J G Adami, a resolution was passed to the effect that the work done justified the existence of the college, and the Bishop of London was made the first honorary fellow Colonel James Cantlie said that the number of students who had passed through the college, which was founded in 1914 as a teaching institution, exceeded 14 000 All communications should be made to Mrs Colin Macdonald, the secretary 3, Vere street, London, W 1

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Lieut. Col J J Nicholas, Australian A.M C, qualified at Melbourne in 1911.

Capt H. D N Mackenzie, R.A.M C, attached Royal Field Artillery, was educated at Edinburgh University and at Middlesex Hospital, London, and qualified in 1895 After holding appointments at the North West London Hospital, the Birmingham General Hospital, and at the Throat Hospital, Golden square, London, he travelled abroad and served as a civil surgeon in the South African War Later he became a special plague medical officer in India and Egypt and prior to the outbreak of war was in practice at Corowa, New South Wales. He joined the R A.M C towards the end of 1915 and did duty at the Dardanelles in Egypt and on the Western front

Capt J P Pegum, R.A.M C, attached Shropshire Light Infantry qualified in 1916, and thereupon joined up

Capt. T J Golding, R.A.M C, qualified in Ireland in 1906, and was in practice in Cork before joining the R.A.M.C

Died of Wounds

Capt H. D Field, R.A.M.C, was a student at St Thomas's Hospital London, and qualified at the latter end of 1914 After holding an appointment at the Royal Victoria Hospital Bournemouth he joined the R A.M C in April 1915

Died

Capt J W Pettinger, R.A.M.C, was educated at Cambridge and at St George's Hospital, London, and qualified in 1899 He was in practice at Kingsbridge, South Devon, before joining up and died of pneumonia at the Military Hospital, Aldershot.

Wounded

Lieut F H. Fuller, R.A.M C, attd. Royal Garrison Artillery
Capt. M. B Lawrie, M.C, South African M.C
Capt. G W Armstrong R.A.M C attd North Staffs Regt.
Lieut. J Rickards, M.C, R.A.M C, attached Royal Scots.
Surgeon A. G Williams, R N
Major G Craig, New Zealand M C
Capt G Redpath New Zealand M C
Capt F W Chamberlain R A.M.C, attached Loyal North Lancs Regiment.
Col J W H Houghton, R.A.M C
Lieut W B Thomson R.A.M C
Major G A. Heydon, M C, Australian A.M C
Major W W S Johnston, M C, Australian A.M C
Capt F E Johnson, R.A.M C, attached Oxford and Bucks Light Infantry
Lieut. W P S Johnson R A.M C attd. East Yorks Regt
Lieut M S Munro, R.A.M C attd West Yorks Regt
Capt E Scott D S O R A M C
Capt C P Symonds R.A.M C att'd Royal Field Artillery
Capt D S Cassidy R A M C attached Berkshire Regiment
Capt R McC Hill D S O R A.M C, attached Argyll and Sutherland Highlanders
Capt H F Warwick R A.M C
Capt W A. Rees R A M C

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Commander R H Graves Burton R D, R N R died suddenly youngest son of Surgeon Major R Graves Burton of Ealing London

Major F M Armstrong Royal Field Artillery killed in action son of the late Dr J F Armstrong of South Shields

Flight Sub-Lieut E C Hillaby R N killed in action, second son of Dr A Hillaby of Pontefract

Sergeant Major F P Hawkley Australian Imperial Force died of wounds only son of Dr F Hewkley of New Cross

Second Lieut L A Joscelyne, M C Somerset Light Infantry killed in action only son of Dr A E Joscelyne of Taunton

Major W G Harington D S O Indian Army died of wounds elder son of Lieut Col H N A Harington I M S (retired)

Lieut J T Willis Royal Flying Corps killed in action only son of Dr J G Willis of Ilkeston Derbyshire

Capt J W Pettinger R A M C died of pneumonia son of the late Dr G W Pettinger of Manchester

Capt J I Chetham Strode Border Regiment killed in action son of Dr J Chetham Strode of Wimpole street and Acton hill London

OBITUARY OF THE WAR

JAMES HENRY BAMPTON M.B, CH B, B SC BIRM

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain J H Bampton, who died of wounds on August 25th, at the age of 29 years, was elder son of Henry Bampton L.D S of Gravelly Hill, Birmingham He was educated at King Edward's Grammar School, Aston, and the University of Birmingham, graduating in science in 1908 and in medicine three years later After filling resident posts at the General Hospital, Birmingham, he was awarded in 1913 the Walter Myers travelling scholarship, and spent 12 months in research work in bacteriology at Hamburg and Berne, publishing a thesis in the *Centralblatt für Bakteriologie* He then obtained a post as assistant medical officer under the Birmingham Education Committee, which he resigned in February, 1915 on obtaining a commission in the Royal Army Medical Corps He was engaged first on embarkation duty, and later on an ambulance-train and on hospital ships At the beginning of 1917 he went to France, where he was attached to the Royal Flying Corps and subsequently to the Royal Field Artillery, when in the fulfilment of duty he met his death

BERNARD WOODHOUSE, M B, B S LOND,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain B Woodhouse, who was killed on active service on Sept. 5th was younger son of the late Lister Woodhouse, of Wimbledon He was educated at Birkenhead School and Cheltenham College, afterwards taking his medical course at University College Hospital. Qualifying in 1913 he held resident appointments at Westminster and University College Hospitals before obtaining his commission in August, 1914 He had just completed three years service at the front when he received shrapnel wounds which proved fatal on the next day At the time of his death he was attached to a Welsh regiment One of Captain Woodhouse's teachers writes of him as a man who gave great promise of good things His commanding officer wrote A man of great kindness and thoughtfulness for others especially for the wounded and sick We all loved him

FREDERICK HARDIE M B CH B EDIN,

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain F Hardie who died of wounds on Sept 20th at the age of 41 years was a student of Edinburgh University graduating there in medicine in 1900 After some time a Bentham he settled in private practice at Southampton - but in October 1914 obtained a commission in the Royal Army Medical Corps attached to a Wessex ambulance Nine months later he was sent to France with a field ambulance and after many near escapes he was killed by a shell from an aeroplane at his ambulance headquarters be found, and that the difficulty was then to be accounted for by the unstable nervous system of the child Dr Waller does not believe it, yet I feel sure that when he expounds the physiology of digestion to workers in infant welfare, he does not omit reference to the teaching of Pawlow on the dependence of gastric secretion upon the emotions or substitute for it entirely his own views upon the ill effects of giving the mother an enema or a dose of salts

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The College of Ambulance—The Bishop of London, who presided at the opening of the fourth year of the work of the college on Monday, Oct 8th, announced the offer of what he termed a 'parsons' ambulance" for the front line service Incidentally Dr Ingram mentioned the experience of a rescuing party of 50, including his own chaplain, who were out for 4½ hours in a heavy barrage and succeeded in bringing in, without one of the rescuing party being hit, 12 men who had lain out for three days and three nights On the motion of Sir Malcolm Morris seconded by Professor J G Adami, a resolution was passed to the effect that the work done justified the existence of the college, and the Bishop of London was made the first honorary fellow Colonel James Cantlie said that the number of students who had passed through the college, which was founded in 1914 as a teaching institution, exceeded 14 000 All communications should be made to Mrs Colin Macdonald, the secretary, 3, Vere street, London, W 1

HOSPITAL TREATMENT OF THE INVALIDED SAILOR OR SOLDIER

Representatives of the honorary medical staffs of the voluntary hospitals of the County Palatine of Chester (and of some of those situate in the counties adjacent) and officers of the local Medical and Panel Committee met at Crewe on Sept 29th to confer on the position of the honorary medical staffs of voluntary hospitals in undertaking the care of invalided seamen and soldiers under arrangement with the Ministry of Pensions Dr J H Marsh of Macclesfield General Infirmary, chairman of the local Medical and Panel Committee, occupied the chair The following resolutions were passed unanimously, and it was decided to submit them to the consideration of the various hospitals concerned, to the Ministry of Pensions, and to the county Pensions Committees —

That the services of the medical profession should not be given gratuitously to patients who are maintained by public funds

That from all payments received by the governing body of a voluntary medical institution from the State or local authority a proportion to be agreed upon between the governing body and the honorary medical staff should be placed to a special fund which shall belong to the honorary medical staff

A scale of charges was also resolved upon, the chief items being as follows —

	£	s	d.
For major operation including anæsthetist s and assistant s fees ..	7	7	0
For minor operation requiring general anæsthesia, including an anæsthetist s fee ..	2	11	6
The anæsthetist s fee (included in the above fees) where the assistant is not a salaried resident medical officer	1	1	0
For minor operation with local anæsthetic ..	1	1	0
For attendance on in patients (after operation or otherwise) for each week	1	1	0

(For less than a week in proportion)

"OUR DAY"—Red Cross work is now said to be costing the country something over £6 a minute, and next Thursday (Oct 18th) an effort will be made to collect a sum of money sufficient to enable the Red Cross to carry on its beneficent work on behalf of the sick and wounded Flags and emblems will be sold as usual on "Our Day" throughout the country several metropolitan mayors have opened supplementary subscription lists and social gatherings of various kinds will further the appeal. Helpers are needed, particularly for the South African section Offers of assistance, gifts, and suggestions will be welcomed by Miss C May Beeman, the organising secretary, 10 West Bolton Gardens, S W 5 —The Viceroy of India has fixed Dec 12th for "Our Day' in India —Americans in England are making a combined present to the British Red Cross Society for "Our Day and contributions for this purpose should be sent to Mr Clarence C Stetson care of The National City Bank of New York 34, Bishopsgate London, E C 2

FIRST AMERICAN RED CROSS HOSPITAL IN EUROPE.—On Oct 4th Mr Page the United States Ambassador opened the first American Red Cross Hospital established in Europe at St. Katherine s Lodge Regent s Park The hospital which will be for American and British officers stands in four acres of grounds and has been equipped for 40 orthopædic patients by Mr and Mrs William Salomon of New York Captain F Kidner of Detroit and Captain de Forrest Willard of Philadelphia, have been chosen as the nucleus of the medical unit under the general supervision of Colonel Sir Robert Jones The nursing staff will be American and a number of well known British physicians and surgeons have signified that their services for other than orthopædic work are at the disposal of the hospital

KING GEORGE S FUND FOR SAILORS —A special effort is being made to augment the funds of the various societies ministering to the needs of our sailors and their dependents under the auspices of King George s Fund for Sailors The *Daily Telegraph* has been particularly associated with this effort and has organised a campaign for making the appeal a national one representing all classes of society Lord Burnham points out a principal inducement to subscribe quickly in the fact that Christmas will bring the first distribution to the societies participating so that the Press will in reality be providing a Christmas present to our sailors The fund is not intended to interfere with subscriptions now being sent directly to the several institutions Amongst others the appeal is supported by Prince Albert the President of King George s Fund for Sailors Sir F Geddes First Lord of the Admiralty, Admiral Sir J R Jellicoe First Sea Lord, and Admiral Sir David Beatty, Commander in Chief of the Grand Fleet The *Daily Telegraph* has made a contribution of £500 to the first list of subscriptions Communications should be addressed to the *Daily Telegraph*, Fleet-street E C 4

Lieutenant-Colonel George Scott Williamson R A.M C, the pathologist to the Bristol General Hospital who went out into "No Man's Land" on August 26th with a stretcher company, is reported missing and there is little doubt that he is a prisener in Germany Colonel Williamson has been twice mentioned in despatches

THE SERVICES

APPOINTMENTS TO THE INDIAN MEDICAL SERVICE

IT has been announced in the Press that after the open competitive examination held in July 1915 for admission to the Indian Medical Service no similar examination would be held during the continuance of the war but that such appointments as might be required to meet absolutely indispensable needs of the Service would be made by nomination by the Secretary of State To assist him in making these appointments which as already announced will be limited in number to the absolutely indispensable needs of the Service he has appointed a Selection Committee who will summon and interview such applicants as may appear to be *primâ facie* suitable and make recommendations for appointment Applications for appointment should be addressed to the Secretary of the Military Department, India Office Whitehall S W 1 and should contain concise particulars of the applicant s medical degrees and career Applicants must be over 21 and under 32 years of age at the time of application Particulars regarding pay promotion &c. in the Service can be obtained from the Secretary Military Department

ARMY MEDICAL SERVICE

Col C H Burtchaell C B C M G to be temporary Surgeon General

TERRITORIAL FORCE.

Capt A G Hebblethwaite to be Deputy Assistant Director of Medical Services

ROYAL ARMY MEDICAL CORPS

Major P S Lelean C B relinquishes the rank of temporary Lieutenant Colonel on re-posting

The undermentioned relinquish the acting rank of Lieutenant Colonel on re-posting Major H W Russell Major G H Richard Major E H M Moore Capt R E U Newman M C

To be acting Lieutenant Colonels —Whilst in command of a Convalescent Depot Major H H Campbell D.S O Major T B Moriarty Major C D Myles Capt A C Elliott Capt A. P Heaton Reserve of Officers Temp Major J Dalrymple Major Reginald V Cowey D S O Whilst in command of a Field Ambulance Capt C E Scaife Capt R E U Newman Major R G Meredith

Temp Lieut.-Col E F Armstrong Canadian Army Dental Corps from a Canadian Infantry Battalion, to be temporary Captain

Temp Major A A Mussen (Major R A.M C T F) relinquishes his temporary commission on re-posting

Temp. Capt A Macphail Canadian A M C to be temporary Major

Temporary Captains Canadian Army Dental Corps to be temporary Captains: J P Coghlan from Canadian A S C J L McLean from Canadian General List C Nicholson from a Canadian Infantry Battalion

Temporary Lieutenants to be temporary Captains: H L Lane J W Wayte M C A S Cook A. J M Crighton G H Sinclair G D Compston R C Allen H E Scoones C T I Clarke W R Wylie B W Howell W I Adams O B Hutchinson J A. H White C I Stockley R H. Maingot J M Adams, H North E. Williams, J Maguire H Somerville L Kilroe A. J P Nowell H Granger W L. Johnson E Cunliffe J E Spence J W Miller E D Richardson J H McAllum S O Pritchard H Case J Forrest S F Lusk J W Elliott H Angel R T Dobson P W Leathart P Lerick A. H Clarke W P Pinder F L. Wood D L Lindsay A J Pirie R M Fenn P Bowes G H Wilkinson T Taylor A. H Wade G C Belcher J H. Wilks E B Hill G Hargreaves W Gibson W J H Hepworth R S Kennedy J F Elliott L. H Taylor W Arnott, J F Carroll A C B Biggs A L. Home G Fleming F W M Palmer G H Ensing L Bathurst A. T Cooper R. Edwards G J Meldon P C C Smith C E A Wilson C W Emlyn A Boothroyd C A Birts J B. Cook W C Sharpe T W Pattinson H. Blyth J B Wall B B Sapwell A A Martin R. W S Christmas

To be temporary Captains: E. Watson P G A Bott (late Captain Field Ambulance R A.M C) F A. Cooke

Temporary Honorary Lieutenants to be temporary Honorary Captains C C Goodall and S Morris

To be temporary Lieutenants: T Drysdale H G P Armitage J F Allan B H Peters G A. Wyon, C J Middleton G V Allen A B Waller R. C W Spence F H Whyte G Blair J T Grierson V Fletcher Barrett W M Thomson, C. W Alford J A Stainsby T C Hynd F D Crew H G G Jeffreys H D Wyatt S W Green W Lock G Price J C Ogilvie, D A. Cron F C Mason P McCool J Findlay A M McCormick G A. Crowley W P Bonner A. J D Cameron L. E C Handson W F Cornwall R. H Calvert E C Hodgson J B Higginson Beatty S K Hutton A R Moir D H Trail H M Johnston

To be temporary Honorary Lieutenants O C Snyder T C Bost. D A Bartley W L Hanson J N Ficel

Officers relinquishing their commissions —Temporary Captains R R. Lilly J A. Longley K. R Aikman J A Cowan C Dickson, R K Sutherland O M de Jong N A Scott J S Stewart R D O Leary J G Greenfield J H Ritchie M C C L. Dodd H. J Burke

just after returning from a tour of duty behind the trenches His commanding officer writes of Captain Hardie's good work under trying and dangerous conditions He leaves a widow and two children

FRANCIS ARTHUR DERAVIN, M B, CH B MELB,

CAPTAIN AUSTRALIAN ARMY MEDICAL CORPS

Captain F A Deravin, who died suddenly on active service at the age of 41 years, was sixth son of the late J T Deravin and was born at Bendigo, Victoria, and educated at the High School Bendigo After graduating in medicine at the Melbourne University, he was for some years resident surgeon to the Fremantle Hospital, Western Australia, and on resigning this position visited London for a year of post-graduate work On his return to Australia he practised at Casterton Victoria, until taking up duty in the Australian Army Medical Corps He was well known in Australia as a keen exponent of all games of sport

MINISTRY OF NATIONAL SERVICE ITS MEDICAL ORGANISATION

In his speech at Nottingham on Oct 9th Sir Auckland Geddes outlined the new medical organisation, inaugurated by him at the Ministry of National Service, of which Dr James Galloway is chief medical commissioner

The New Recruiting Machine

The various professional bodies in the United Kingdom are being closely linked up in the construction of a new recruiting machine, with a medical advisory board at its head, to which they send representatives The country is divided up into a series of regions, each under a medical commissioner, who is provided by the responsible civilian medical organisation with a list of medical men of good standing in his area willing to serve on the medical boards The president of each National Service medical board is a whole time official of the Department and is a civilian approved by the medical advisory board He is assisted by a rota of local members, generally three at a time, who serve for a day or more in the week as is consistent with their work as medical practitioners The boards work to standards settled by the Department, the instructions laid down amount practically to a text-book of medical standards in the preparation of which Dr W Hale White has given much help The old categories, which were always administrative rather than medical in intention, have been done away in favour of four grades as follows (1) Men organically sound, of good mental capacity and muscular development and without any deficiency in their special senses (2) Men organically sound and capable of standing exposure but deficient in some special respect—e g, short-sighted deaf flat-footed, and so on (3) Men falling between grades (2) and (4) This grade is marked for whatever class of work the man is fit for (4) Men so unfit as to make it unfair to expect them to undertake strenuous work at all

Any man who has been examined by a National Service medical board and considers that he has new facts to bring before the board may apply for a fresh examination If he thinks he has been hardly treated by their decision he may refer to the lay appeal tribunal for a re examination If a *prima facie* case is made out he is then examined by assessors appointed to groups of tribunals by the Local Government Board in England and the Scottish Office Should the assessors find him unfit the Director of National Service accepts their decision as final

First Meeting of the Medical Advisory Board

The first meeting of the medical advisory board took place at the Ministry Windsor Hotel Victoria street on October 4th The board consists of the Chief Com missioner Dr James Galloway, C B who is the head of the Medical Department of the Ministry Sir Donald McAlister (General Medical Council), Mr J W B Hodsdon President Royal College of Surgeons, Edinburgh (Scottish Medical War Emergency Committee) Mr Charles Ryall (Committee of Reference of the English Royal Colleges) Dr T J Verrall and Mr E B Turner (Central Medical War Committee), Professor Arthur Keith, and Dr J Arnallt Jones Representatives of the Local Government Board, Scottish Office Naval and Military Services, and National Health Insurance Commission attended

Sir Auckland Geddes, who was in the chair, commented on the changed conditions under which medical examinations have to be conducted under the present compulsory military service as compared with those of the early days of the war when all those presenting themselves were volunteers Since the beginning of 1917, and especially since the Review of Exceptions Act, there had been, he said a great deterioration in both the willingness and the fitness of men called upon to undertake military service Medical boards had had to face in the past much abuse from persons who fostered unwillingness to serve and who took every chance which offered of discrediting the medical examination of recruits He went on to describe the abuses which had arisen under the old system Medical certificates of unfitness had been given on the scantiest evidence personation had been rife, and even members of boards had been influenced by unworthy motives to place a man unjustifiably in a low category 14,000 prosecutions had been instituted on charges connected with these abuses during the past 14 months The Minister described the plans of the medical department of the National Service Ministry as nothing short of a medical survey of the male population of military age in which he saw a scientific opportunity of great possibility Arrangements were being made by the Ministry for the supply of medical men to all the Government departments, as well as to deal with the shortage of medical students at the schools On all these matters the medical advisory board would be referred to for counsel and guidance, and Sir Auckland Geddes proposed to call upon it to enlist on his behalf the aid of the existing organisations of the medical profession in order that the Ministry of National Service might become a clearing house in correlating medical activities with the requirements of the nation at large and those of the Navy, Army, Air Board, Local Government Board, Pensions Ministry, Scottish Office and National Insurance Commission The work of nominating the medical boards had been, he said, referred to the Statutory Committees of the profession Sir Auckland Geddes concluded by stating that the work of preliminary organisation, as outlined above, is being rapidly accomplished, and that the new system will be instituted on Nov 1st

THE WAR RECORD OF THE LONDON MEDICAL SCHOOLS THE THIRD YEAR OF WAR

We have received the following revised returns concerning the war record of the Middlesex Hospital —

Joined the military branch of the Service, 374 Joined the naval branch of the Service, 47 Died, 24 Wounded, 38 Mentioned in despatches, 20 Prisoners of war, 3 Missing 2 Torpedoed, 3 D S O, 2 Croix Rouge Francaise, 1 Croix de Guerre, 1 Military Cross, 9

INDIAN MILITARY HOSPITALS

The hospitals receiving overseas cases have been brought steadily up to date, with modern medical equipment and the provision of electric light and fans Convalescent sections and depôts have been established for the reception of British and Indian soldiers discharged from war hospitals who no longer require in patient treatment Facilities exist for orthopædic and electro-therapeutic treatment of cases in hospitals at Bombay, Cawnpore Umballa and the Red Cross hospitals at Mussoorie and Dehra Dun British convalescent enteric depots have been opened for the segregation of this class of case during convalescence Lady nurses are employed in all British war hospitals in station hospitals of any size, and in Indian war hospitals at Bombay Poona Rawal Pindi Karachi Secunderabad, and Meerut

The St John Ambulance Association at Simla has issued a letter amplifying a proposal to expand the service of the Voluntary Aid Division in India. It is believed that there will be no difficulty in obtaining a number of suitable candidates prepared to qualify for work in hos pitals and prepared to give their services to supplement and assist the regular staff All the work to be done by such ladies would be voluntary, and those who participated in it would not be liable to transfer from one station to another Ladies willing to become hospital visitors or hospital nurses should be over 20 years of age and present certificates of proficiency in first-aid and home nursing

HOSPITAL TREATMENT OF THE INVALIDED SAILOR OR SOLDIER

Representatives of the honorary medical staffs of the voluntary hospitals of the County Palatine of Chester (and of some of those situate in the counties adjacent) and officers of the local Medical and Panel Committee met at Crewe on Sept 29th to confer on the position of the honorary medical staffs of voluntary hospitals in undertaking the care of invalided seamen and soldiers under arrangement with the Ministry of Pensions Dr J H. Marsh, of Macclesfield General Infirmary, chairman of the local Medical and Panel Committee occupied the chair The following resolutions were passed unanimously and it was decided to submit them to the consideration of the various hospitals concerned to the Ministry of Pensions, and to the county Pensions Committees —

That the services of the medical profession should not be given gratuitously to patients who are maintained by public funds

That from all payments received by the governing body of a voluntary medical institution from the State or local authority a proportion to be agreed upon between the governing body and the honorary medical staff should be placed to a special fund which shall belong to the honorary medical staff.

A scale of charges was also resolved upon, the chief items being as follows —

	£	s	d.
For major operation, including anæsthetist s and assistant s fees	7	7	0
For minor operation requiring general anæsthesia, including an anæsthetist s fee	2	11	6
The anæsthetist s fee (included in the above fees) where the assistant is not a salaried resident medical officer	1	1	0
For minor operation with local anæsthetic	1	1	0
For attendance on in-patients (after operation or otherwise) for each week	1	1	0

(For less than a week in proportion)

' OUR DAY "—Red Cross work is now said to be costing the country something over £6 a minute and next Thursday (Oct 18th) an effort will be made to collect a sum of money sufficient to enable the Red Cross to carry on its beneficent work on behalf of the sick and wounded Flags and emblems will be sold as usual on "Our Day' throughout the country several metropolitan mayors have opened supplementary subscription lists and social gatherings of various kinds will further the appeal. Helpers are needed particularly for the South African section Offers of assistance, gifts and suggestions will be welcomed by Miss C May Beeman, the organising secretary, 10 West Bolton Gardens, S W 5 —The Viceroy of India has fixed Dec 12th for ' Our Day in India —Americans in England are making a combined present to the British Red Cross Society for Our Day " and contributions for this purpose should be sent to Mr Clarence C Stetson care of The National City Bank of New York, 34 Bishopsgate London E C 2.

FIRST AMERICAN RED CROSS HOSPITAL IN EUROPE.—On Oct 4th Mr Page the United States Ambassador opened the first American Red Cross Hospital established in Europe at St. Katherine s Lodge Regent s Park. The hospital which will be for American and British officers stands in four acres of grounds and has been equipped for 40 orthopædic patients by Mr and Mrs William Salomon of New York. Captain F Kidner of Detroit and Captain de Forest Willard of Philadelphia, have been chosen as the nucleus of the medical unit under the general supervision of Colonel Sir Robert Jones The nursing staff will be American and a number of well known British physicians and surgeons have signified that their services for other than orthopædic work are at the disposal of the hospital.

KING GEORGE S FUND FOR SAILORS —A special effort is being made to augment the funds of the various societies ministering to the needs of our sailors and their dependents under the auspices of King George s Fund for Sailors The *Daily Telegraph* has been particularly associated with this effort and has organised a campaign for making the appeal a national one representing all classes of society Lord Burnham points out a principal inducement to subscribe quickly in the fact that Christmas will bring the first distribution to the societies participating so that the Press will in reality be providing a Christmas present to our sailors The fund is not intended to interfere with subscriptions now being sent directly to the several institutions. Amongst others the appeal is supported by Prince Albert the President of King George s Fund for Sailors Sir E. Geddes First Lord of the Admiralty, Admiral Sir J R Jellicoe First Sea Lord, and Admiral Sir David Beatty Commander-in Chief of the Grand Fleet The *Daily Telegraph* has made a contribution of £500 to the first list of subscriptions Communications should be addressed to the *Daily Telegraph* Fleet-street E C 4

Lieutenant-Colonel George Scott Williamson R.A.M C, the pathologist to the Bristol General Hospital who went out into ' No Man s Land' on August 26th with a stretcher company is reported missing and there is little doubt that he is a prisoner in Germany Colonel Williamson has been twice mentioned in despatches

THE SERVICES

APPOINTMENTS TO THE INDIAN MEDICAL SERVICE

IT has been announced in the Press that after the open competitive examination held in July 1915 for admission to the Indian Medical Service no similar examination would be held during the continuance of the war but that such appointments as might be required to meet absolutely indispensable needs of the Service would be made by nomination by the Secretary of State To assist him in making these appointments which as already announced, will be limited in number to the absolutely indispensable needs of the Service he has appointed a Selection Committee who will summon and interview such applicants as may appear to be *primâ facie* suitable and make recommendations for appointment Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S W 1 and should contain concise particulars of the applicant s medical degrees and career Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay promotion &c., in the Service can be obtained from the Secretary Military Department.

ARMY MEDICAL SERVICE.

Col. C H Burtchaell C B C M.G., to be temporary Surgeon General.

TERRITORIAL FORCE.

Capt A G Hebblethwaite to be Deputy Assistant Director of Medical Services

ROYAL ARMY MEDICAL CORPS

Major P S Lelean C.B relinquishes the rank of temporary Lieutenant-Colonel on re-posting

The undermentioned relinquish the acting rank of Lieutenant Colonel on re-posting Major H W Russell Major G H. Richard Major E H M Moore Capt R E U Newman. M C

To be acting Lieutenant-Colonels —Whilst in command of a Convalescent Depot Major H. H Campbell D.S O Major T B Moriarty Major C D Myles Capt A C Elliott Capt A. F Heaton. Reserve of Officers Temp Major J Dalrymple Major Reginald V Cower D S O Whilst in command of a Field Ambulance Capt. C E. Scaife Capt R E U Newman Major R. G Meredith.

Temp Lieut.-Col E. F Armstrong Canadian Army Dental Corps from a Canadian Infantry Battalion, to be temporary Captain

Temp Major A A. Mussen (Major R A M C T F) relinquishes his temporary commission on re-posting

Temp. Capt A Macphail, Canadian A.M C to be temporary Major

Temporary Captains Canadian Army Dental Corps, to be temporary Captains: J P Coghlan from Canadian A.S C., J L. McLean from Canadian General List C Nicholson, from a Canadian Infantry Battalion.

Temporary Lieutenants to be temporary Captains: H A. Lane J W Wayte M C A. S Cook, A J M. Crighton G H Sinclair G D Compston. R C Allen, H. E Scoones C T I Clarke W R. Wylie B W Howell W I Adams. C B Hutchinson, J A. H White C I Stockley R.H. Maingot, J M Adams H. North E. Williams, J Maguire H. Somerville L. Kilroe A J P Nowell, H. Granger W L. Johnson E Cunliffe J E Spence J W Miller E D Richardson J H. McAllum S C Pritchard, H Care J Forrest S F Lusk, J W Elliott H Angel R. T Dobson P W Leathart, P Lerick A. H Clarke W P Pinder F L. Wood D L. Lindsay A J Firie R. M Fenn P Bower G H Wilkinson, T Taylor A. H Wade, G C Beecher J H. Wilks E B Hill G Hargreaves W Gibson W J H Hepworth R. S Kennedy J F Elliott, L. H Taylor W Arnott, J F Carroll, A C B Biggs A L. Home G Fleming F W M Palmer G H Ewing L Bathurst A T Cooper R. Edwards, G J Meldon, P C C Smith C R A Wilson C W Emlyn A Boothroyd C A. Birts, J B. Cook, W C Sharpe T W Pattinson, H. Blyth J B Wall B B Sapwell, A A. Martin R. W S Christmas

To be temporary Captains: E. Watson, P G A. Bo (late Captain Field Ambulance R.A.M C) F A. Cooke

Temporary Honorary Lieutenants to be temporary Honorary Captains C C Goodsall and S Morris

To be temporary Lieutenants T Drysdale H G P Armitage J F Allan B H Peters, G A. Wyon. C J Middleton G V Allen A E Waller R. C W Spence F H Whyte G Blair J T Grierson W Fletcher Barrett W M Thomson. C. W ALord J A Salusby T C Hynd F D Crew H G G Jeffreys H D Wra. S W Green W Lock G Price J C Ogilvie. D A. Crow F C Mason P McCool J Findlay A. W McCormick G A Crowler W P Bonner A. J D Cameron L. E. C Handron W F Cornwall P H. Calrow E. G Hodgson J B Higginson Beatty S K Hutton A. P Mc r D H Trall, H M. Johnston

To be temporary Honorary Lieutenants O C Sarver T C B[illegible] D A Bartley W L Hanson J V Fisel.

Officers relinquishing their commissions —Temporary Captains R. R. Lilly J A. Loozier K B Aikman J A. C [illegible] C Dickson, K h Sutherland O M. de Jong N A. [illegible] J S Stewart L D O Leary J G Greenfield J H Litch M C C L. Doll, H. J Burke

M C S A C MacKenzie, G W Kendall, H M Hart Smith, J D Jones J T MacKenzie M C G L K Finlay E O Connor, A W Bourne, R M Alcorn, J C T Teggart L C B Murphy, H Wales, C R. Hoskyn, F J Hathaway, W J D Robertson G N B Sebastian R P Graham D M Gill D McKail J Macarthur T Milling G F Gill, T H James J Crowley D St C Creighton, R. J Kee J W Darling M C, T Campbell A Simmons, W P MacKasey, J L Gregory A Frew, H S Tait I Wilson Temp Capt W Allan (and is granted the honorary rank of Captain), Temp Lieuts P D Magowan (having ceased to be employed at the Lord Derby War Hospital), C H Bryan A Macrae W H Roache (on account of ill health) W J G Johnson S R Sibbald, J L Phipps A Macintyre R McC Blair F Adye-Curran, E W Cross, C J B Edmonds E J Roberts W A MacKay, J W Shields (on account of ill health) R Govan (on account of ill health contracted on active service) F Lilley Temp Hon Lieut W R Rowlands (on ceasing to be employed with British Red Cross Hospital, Netley)

SPECIAL RESERVE OF OFFICERS

Major J C Furness relinquishes the acting rank of Lieutenant-Colonel on re-posting

Capt W H L McCarthy M C to be acting Lieutenant-Colonel whilst in command of a Field Ambulance

To be Lieutenants: J G McKendrick Macaulay and P F A Grant (from Glasgow University Contingent O T C) A B Cocker J B Irving, and J W Morris (from Glasgow University Contingent, O T C)

TERRITORIAL FORCE.

Major T D Greenlees relinquishes his commission on account of ill health

Capt J P H Davies relinquishes his commission on account of ill health

Capt W H P Hey is restored to the establishment

Capt J M Fortescue Brickdale is restored to the establishment

Capt (temp Major) A Leggat to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

Capt K. W Jones D S O is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services

Capt R Burgess, M C to be acting Lieutenant whilst commanding a Field Ambulance

Capt A G Hebblethwaite is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services

Capts L L Hanhan and J Murdock relinquish their commissions on account of ill health contracted on active service and are granted the honorary rank of Captain

Capt G H Hart relinquishes his commission

Capt (temp Major) A C Alport relinquishes his temporary rank on alteration in posting

Capt A Iredale relinquishes his commission on account of ill health

Lieut T M Metcalfe to be Captain

W T Shields 1st Battalion Staffordshire Volunteer Regiment to be Temporary Lieutenant and Medical Officer

URBAN VITAL STATISTICS

(Week ended Oct 6th, 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons, the annual rate of mortality was 11 1, against 11 1 and 10 8 per 1000 in the two preceding weeks In London, with a population exceeding 4 000 000 persons, the death rate was 11·5 or 0·3 per 1000 above that recorded in the previous week among the remaining towns the rates ranged from 3 4 in Eastbourne 4 0 in Derby and 4·2 in Bath, to 17 4 in Rochdale 18 0 in Cambridge and 30 1 in Stockton on Tees The principal epidemic diseases caused 375 deaths which corresponded to an annual rate of 1 2 per 1000 and included 278 from infantile diarrhœa, 33 from diphtheria, 26 from whooping-cough, 24 from measles, 8 from scarlet fever and 6 from enteric fever The deaths from diarrhœa which had been 262 344, and 267 in the three preceding weeks slightly rose to 278, and included 72 in London 17 in *Liverpool* 16 in Sheffield 14 in Manchester and 11 in Hull The 853 cases of scarlet fever and 1166 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 37 and 43 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns, 163 resulted from violence The causes of 32 deaths were uncertified of which 5 were registered in Birmingham 5 in South Shields and 4 in Liverpool

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500 000 persons the annual rate of mortality was 10·7, against 11 6 and 11·9 per 1000 in the two preceding weeks. The 241 deaths in Glasgow corresponded to an annual rate of 11 3 per 1000 and included 10 from whooping cough 9 from infantile diarrhœa, 3 from diphtheria 2 from scarlet fever and 1 from enteric fever The 74 deaths in Edinburgh were equal to a rate of 11 6 per 1000 and included 5 from infantile diarrhœa and 2 from diphtheria

Irish Towns —The 88 deaths in Dublin corresponded to an annual rate of 11 5 or 1·0 per 1000 below that recorded in the previous week and included 7 from infantile diarrhœa 2 from whooping-cough and 1 from diphtheria The 77 deaths in Belfast were equal to a rate of 10 2 per 1000 and included 6 from infantile diarrhœa and 1 each from enteric fever and measles

LITERARY INTELLIGENCE —The sixth edition, revised and enlarged, of "Tropical Diseases," by Sir Patrick Manson, is announced by Messrs Cassell and Co In view of the rapid advances in the study and treatment of tropical diseases the author has subjected the book to a thorough revision The chapter on Mosquitoes and the sections on Tsetse Flies and Ticks have been brought up to date by Lieutenant-Colonel Alcock, of the London School of Tropical Medicine

Medical News.

UNIVERSITY OF CAMBRIDGE —At the examination in Sanitary Science held recently the following candidates satisfied the Examiners in both parts of the examination —

Alfred John Gibson, Captain R A M C; Gerald Bovell Mason Captain R A M C; and Donald Wainwright.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND —At the Second Professional Examination in Anatomy and Physiology held on Sept 27th and 28th and Oct 1st and 2nd 79 candidates presented themselves, of whom 55 were approved and 24 were rejected The following are the names and schools of the successful candidates —

Thomas Adam, St. Bartholomew's Hospital Marjorie Muriel Sibley Bartlett and Grace Mary Beaven London School of Medicine for Women William Ryding Bennette and Walter Bowler, Liverpool University; Percy Croad Brett, St Mary's Hospital John Piercy Brown Liverpool University Thomas Harold Burlend University College Cardiff Kenneth Entwisle Bury, St Thomas's Hospital John William Chadwick Manchester University Sarah Annie Cooper King's College Philippe Couacoud Guy's Hospital; Charles Owen Davies, Liverpool University; Edith Margery Pearce Davies London School of Medicine for Women; Harold Spencer Davies, University College Cardiff, and St Bartholomew's Hospital Michele Arcangelo Distaso Naples University Kenneth Henry Douss and Mohammed Nour El Din St Bartholomew's Hospital; Ralph Wilfrid Fairfax King's College; Arthur John Gardham University College Frederick John Good and Barnett Gould London Hospital Egerton Charles Grey, Guy's Hospital; Sydney Hazeldine, University College Frank Heber London Hospital; George Hubert Howe Guy's Hospital; William Vincent Hughes St Mary's Hospital Edgar Francis Job Jones Cardiff and St Mary's Hospital; John Jones Liverpool University and University College Thomas Trefor Jones Manchester University; Francis Knoyle Middlesex Hospital; Gerald Joseph Wyld McMichael Birmingham University and University College Montague Maizels University College James Aird Morton St Bartholomew's Hospital Hussein Yosrat, University College and St Bartholomew's Hospital Cyril Augustus Paulusz, Ceylon Medical College Joseph Proujansky London Hospital Mary Colegrave Prideaux London School of Medicine for Women Beresford Tom Richards Birmingham University Leonard Ignatius Roberts Madras and Middlesex Hospital Harold Whillite Robinson London Hospital Frank Paul Schofield St. Bartholomew's Hospital Samuel Leon Szpigner London Hospital Joseph Gillison Tait Edinburgh University; Edgar James Targett Birmingham University Harold Edwin Thomas, University College Leslie James Timings Birmingham University William Henry Turner Guy's Hospital Madeline Hilda Jane Umpleby London School of Medicine for Women Harold John Vane-Sutton Middlesex Hospital Abram Adolf Weinger, Paris and King's College; Effie Adela Wharton London School of Medicine for Women John Stanley White St. Bartholomew's Hospital Octavia Margaret Wilberforce Royal Free Hospital and Charles Florance Young London Hospital

ROYAL COLLEGE OF SURGEONS OF ENGLAND ANNUAL MEETING OF FELLOWS AND MEMBERS —A meeting of Fellows and Members will be held at the College on Thursday, Nov 15th, at 3 o'clock P M, when a report from the Council will be laid before the meeting Fellows and Members can obtain copies of the report on application to the secretary, and can, if they so desire, have their names placed on the list of those to whom the report is sent annually Motions to be brought forward at the meeting must be signed by the mover, or by the mover and other Fellows and Members, and must be received by the secretary, Mr S Forrest Cowell, not later than Nov 6th A printed copy of the agenda will be issued on or after Nov 13th to any Fellow or Member who may apply for one

SOCIETY OF APOTHECARIES OF LONDON —At examinations held recently the following candidates were successful —

PRIMARY EXAMINATION PART I

Biology —W H Shipway Bristol and R S Thomas Cardiff

Materia Medica and Pharmacy —J A Marriott and J Yates Manchester

PRIMARY EXAMINATION PART II

Anatomy —M L Barst, London Hospital G M Beaven Royal Free Hospital; H L Bowen Guy's Hospital; J A Cohen King's College C R Corfield Manchester; A H G Down University College M A K El Hennawy, St Mary's Hospital G E W Felce Guy's Hospital A Furness and G Furness Manchester W E K Kirby University College J Kershaw Manchester M S Mahmud Liverpool G L. Meachim and P G Parkinson Manchester; P L. Richardson Guy's Hospital, G W Robinson King's College; E Savage Cardiff and St. Bartholomew's Hospital; H E Suter St Mary's Hospital; and A Williams Bristol

Physiology —M L. Barst, London Hospital G M Beavon Royal Free Hospital; H Brown Liverpool C R Corfield Manchester G C W Curson Guy's Hospital D J Davies Cardiff and St. Bartholomew's Hospital A H G Down University College G E W Felce Guy's Hospital, A Furness and G Furness Manchester J A Hart, London Hospital M A R Khalifa, Guy's Hospital; J Kershaw and G L Meachim Manchester R Savage Cardiff and St Bartholomew's Hospital; J H Suliaman Guy's Hospital and H E Suter St Mary's Hospital

UNIVERSITY OF GLASGOW —The following degrees were conferred on Oct 8th —

Bachelor of Medicine and Bachelor of Surgery (*M B Ch.B*)—Maud Christine Cairney (with commendation) Basil William Henry Fergus James Biggam Douglas Galbraith Kenneth John Alexander Gillanders William Mackintosh Kerr Elizabeth Clark M Baffie John Macleod Alice Julia Marshall, Margaret Mercedes Morton Frederick Luborius Richard Andrew Riddell Samuel Murdoch Riddick Ian Menteith Robertson Jessie Napier Robertson John Alexander Stewart, Joseph Turner Taylor William Halliday Wallace and John Pendleton White.

Mr Jules Steinmetz Martin who graduated on July 21st, has gained the Brunton Memorial Prize of £10 awarded to the most distinguished graduate in medicine of the year

WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND —At the meeting on Oct 10th Sir Alfred Pearce Gould, who was in the chair, laid stress on the unique character of this fund, which is administered by civilian doctors to assist in the reinstatement of their civilian colleagues after the war The policy of the fund was to collect and invest a large sum of money during the war, and to distribute the whole within a year or two of its conclusion

WESTMINSTER HOSPITAL MEDICAL SCHOOL —The following entrance scholarships have been awarded —Scholarships in anatomy and physiology, £50 each Florence J Humphreys George Baxter, and Helena J Webster

GUY S HOSPITAL MEDICAL SCHOOL —The following Entrance Scholarships have been awarded —Senior Science Scholarship for University students (£75) Richard Gainsborough, Magdalen College, Oxford Junior Science Scholarship (£120) Alfred Talbot Rogers, Preliminary Science Class, Guy's Hospital Scholarships in Arts (£50 each) George Russell Morgan Apsey The King's School, Canterbury, and Charles Hugh Christie Toussaint, St Bees School

KING EDWARD VII SANATORIUM —On his appointment as medical adviser to the London Insurance Committee in respect to the administration of sanatorium benefit Dr Noel Dean Bardswell has resigned his post as superintendent at the King Edward VII Sanatorium, Midhurst, which he has held since the foundation of the institution in 1906

THE BRITISH HOSPITALS ASSOCIATION —A conference will be held at Westminster Hospital on Friday, Oct 19th, at 3.30 P M, to consider the increase of grants for the medical treatment of soldiers and the proposed payment for discharged soldiers The chair will be taken by Mr Wade Deacon, chairman of the Royal Infirmary, Liverpool, and the Rev G B Cronshaw, chairman of the Radcliffe Infirmary, Oxford, will open the discussion

WEST LONDON MEDICO CHIRURGICAL SOCIETY —At the opening meeting of the session 1917–18 held at the West London Hospital on Oct 5th Dr A. J Rice-Oxley having been inducted to the presidency by the retiring President, Dr E A Saunders, presented the latter with the Keetley memorial medal and expressed the appreciation of the society for his work during the past session Dr Rice-Oxley then delivered an address on 'The Medical Man as Portrayed in English Literature"

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—The annual general meeting of this society will be held at No 1 Upper Montague street Russell square London W C, on Friday Oct 19th, at 5 P M Dr Charles Sanders will be inducted as President for the year 1917–18 After the formal business of receiving the reports of the officers Dr Sanders will open a discussion on 'The Prophylaxis of Venereal Diseases" when an important debate may be expected in view of the enormous public importance of the subject

THE MAYORALTY OF BATH —The new mayor of Bath will be Dr Preston King who occupied the chair as recently as 1913–14

MUNICIPAL SANITATION AND TOWN PLANNING —Three public lectures arranged in connexion with the Chadwick Departments of Municipal Engineering and Hygiene and the Department of Town Planning will be held at University College London as follows Thursday Oct 18th at 5 30 P M The Effect of the War on Municipal Engineering and Public Health " by Mr H Percy Boulnois, M Inst C E Chairman Sir Maurice Fitzmaurice C M G Thursday Nov 1st at 5.30 P M 'Sanitary Work in the Army by Major Arthur J Martin Chairman the Hon Sir John McCall M D LL D Agent General for Tasmania Thursday Nov 15th at 5 30 P M Some General Aspects of Town Planning after the War " by Professor S D Adshead F R I B A Application for tickets accompanied by a stamped addressed envelope should be sent to the Secretary University College, Gower street London W C 1

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS —The general annual meeting of these Funds will be held at the R A M C College, Grosvenor road, London, S W, on Friday, Oct 26th, at 3 P M Sir Alfred Keogh, Director General A.M.S, has consented to preside

PRESENTATION TO A MEDICAL MAN —Mr Ephraim Frederick Hastings Burroughs L R C S Irel, L A.H Dub, who has been surgeon to the Rational Friendly Society at Redland Bristol, was presented with a purse of gold, as a mark of respect, on the occasion of his resigning the appointment after 25 years' service

MEMORIAL TO THE LATE SIR GEORGE TURNER —A memorial has been placed in Hoddesdon Church, Hertfordshire, bearing the following inscription —

> In grateful memory of Sir George Turner Kt. M.B for many years medical officer of this district and resident in this parish afterwards medical officer of health for the Transvaal and member of the Legislative Council By his discovery of a remedy for rinderpest he conferred a priceless and lasting benefit on the colony For many years he made a study of leprosy with a view to its cure and at last himself contracted the disease and sacrificed his life in the endeavour to save that of others He died at Colyton in Devon March 12th 1915 aged 67 This tablet was erected by a few friends in admiration of his devotion to duty and spirit of self-sacrifice

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week, such information for gratuitous publication.*

DOUBBLE M. S L R C P Lond M R C S has been appointed Medical Officer for the Perranzabuloe District by the Truro (Cornwall) Board of Guardians

EEDLE, E J L.R.C P Lond M R C S Public Vaccinator for the Ashley District by the Bristol Board of Guardians

JEROME, L. J L.R C P L.R C S Edin, Medical Officer of Health for the Camelford (Cornwall) District Council.

KELLY C Medical Officer for the Bow Colebrooke and Coleridge Districts by the Crediton (Devon) Board of Guardians

LAWRENCE, W B M.R C S L R C P Lond. Tuberculosis Officer for Bournemouth

PAULI E H C L.R.C P (Lond) M R C.S Public Vaccinator for the Knowle District by the Bristol Board of Guardians

PIGGOTT F S L L.R C P Lond. M R C S Medical Officer of Health for Teignmouth (Devon)

RUSSEL, A. J H Captain I.M S., Professor of Hygiene and Bacteriology Medical College and Resident Medical Officer General Hospital Madras sub pro tem with effect from July 2nd 1917

SIMONS R J R C L.R C P Lond M R C S (Lieutenant Colonel R.A.M.C T F) Medical Officer by the Chippenham (Wilts) Board of Guardians

WHITWORTH H P L R C P Lond M R C S Medical Officer for the St Agnes District by the Truro (Cornwall) Board of Guardians

THE following have been appointed Certifying Surgeons under the Factory and Workshop Acts **ASHCROFT** J A., M D Edin for the Littleborough District of the county of Lancaster **BLOOMER**, F W M.R C S L.S A., *for the Long Eaton* District of the county of Derby **BYRNE**, E C L R.C P., L.R C S I for the Burton Latimer District of the county of Northampton **CROMPTON** K. E. M B B.C Cantab for the Wotton under Edge District of the county of Gloucester and **MUIR**, J F M D Glasg., for the Whitehaven District of the county of Cumberland

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

ASHTON UNDER LYNE, DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL —House Surgeon Salary £250 per annum, with board &c.

BERMONDSEY TUBERCULOSIS DISPENSARY —Medical Officer Salary £500 per annum

BETHNAL GREEN METROPOLITAN BOROUGH OF —Female Assistant Medical Officer of Health Salary £400 per annum

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £175 per annum with board &c

BIRMINGHAM GENERAL HOSPITAL.—Resident Anæsthetist Salary £150 per annum with board &c

BOLINGBROKE HOSPITAL, Wandsworth Common S W —Resident Medical Officer and House Surgeon Salary £200 and £150 per annum respectively each with board &c

BOLTON INFIRMARY AND DISPENSARY —Female Senior House Surgeon Salary £250 per annum with board &c

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon. Salary at rate of £120 per annum with board, &c

CARDIFF KING EDWARD VII S HOSPITAL.—Fourth Year Student Dresser Salary at rate of 52 guineas per annum with board &c.

CHESTER ROYAL INFIRMARY —Honorary Radiographer

DERBY DERBYSHIRE ROYAL INFIRMARY —Resident Surgical Officer

EDINBURGH CRAIG-LOCKHART POORHOUSE AND HOSPITAL.—Assistant Medical Officer Salary £250 per annum with board, &c

EVELINA HOSPITAL FOR CHILDREN Southwark London S E —House Physician and House Surgeon Salary at rate of £160 per annum with board &c

M C S A.O MacKenzie, G W Kendall, H. M. Hart-Smith J D Jones J T MacKenzie M.C G L K Finlay E O'Connor A. W Bourne R. M Alcorn, J C T Teggart, L C E Murphy H Wales, C R Hoskyn, F J Hathaway W J D Robertson G N B Sebastian R P Graham D M Gill D McKail J Macarthur T Milling G F Gill T H James J Crowley D St. C Creighton R. J Kee, J W Darling M.C T Campbell A Simmons, W P Mackasey, J L Gregory A. Frew, H S Tait, I Wilson Temp Capt W Allan (and is granted the honorary rank of Captain), Temp Lieuts P D Magowan (having ceased to be employed at the Lord Derby War Hospital) C H Bryan, A Macrae, W H Roache (on account of ill health) W J G Johnson S R Sibbald J L Phipps, A Macintyre, R. McC Blair F Adye-Curran E W Cross C J B Edmonds B J Roberts W A MacKay J W Shields (on account of ill health) R Govan (on account of ill health contracted on active service) F Lilley Temp Hon Lieut. W R Rowlands (on ceasing to be employed with British Red Cross Hospital, Netley)

SPECIAL RESERVE OF OFFICERS

Major J C Furness relinquishes the acting rank of Lieutenant-Colonel on re-posting

Capt W H L McCarthy M.C to be acting Lieutenant-Colonel whilst in command of a Field Ambulance

To be Lieutenants J G McKendrick Macaulay and P F A. Grant (from Glasgow University Contingent. O T C) A. B Cocker J B Irving and J W Morris (from Glasgow University Contingent O T C)

TERRITORIAL FORCE

Major T D Greenlees relinquishes his commission on account of ill health

Capt J P H Davies relinquishes his commission on account of ill health

Capt W H P Hey is restored to the establishment

Capt J M Fortescue-Brickdale is restored to the establishment.

Capt (temp Major) A. Leggat to be acting Lieutenant-Colonel whilst commanding a Field Ambulance

Capt K. W Jones D S O is restored to the establishment on vacating the appointment as Deputy Assistant Director of Medical Services

Capt R Burgess M C to be acting Lieutenant whilst commanding a Field Ambulance

Capt A G Hebblethwaite is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services.

Capts. L L Hanhan and J Murdock relinquish their commissions on account of ill health contracted on active service, and are granted the honorary rank of Captain

Capt G H Hart relinquishes his commission

Capt (temp Major) A C Alport relinquishes his temporary rank on alteration in posting

Capt A Iredale relinquishes his commission on account of ill health

Lieut T M Metcalfe to be Captain

W T Shields 1st Battalion Staffordshire Volunteer Regiment to be Temporary Lieutenant and Medical Officer

URBAN VITAL STATISTICS

(Week ended Oct 6th, 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 11 1 against 11 1 and 10·8 per 1000 in the two preceding weeks In London with a population exceeding 4 000 000 persons the death rate was 11·5 or 0 3 per 1000 above that recorded in the previous week among the remaining towns the rates ranged from 3 4 in Eastbourne, 4·0 in Derby and 4 2 in Bath to 17 4 in Rochdale 18·0 in Cambridge and 30 1 in Stockton on Tees. The principal epidemic diseases caused 375 deaths which corresponded to an annual rate of 1·2 per 1000 and included 278 from infantile diarrhœa, 33 from diphtheria, 26 from whooping-cough 24 from measles, 8 from scarlet fever, and 6 from enteric fever The deaths from diarrhœa which had been 262, 344, and 267 in the three preceding weeks slightly rose to 278 and included 72 in London, 17 in Liverpool 16 in Sheffield 14 in Manchester and 11 in Hull The 853 cases of scarlet fever and 1166 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 37 and 43 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns 163 resulted from violence. The causes of 32 deaths were uncertified of which 5 were registered in Birmingham 5 in South Shields and 4 in Liverpool

Scotch Towns —In the 16 largest Scotch towns with an aggregate population estimated at nearly 2,500 000 persons the annual rate of mortality was 10·7 against 11 6 and 11·9 per 1000 in the two preceding weeks The 241 deaths in Glasgow corresponded to an annual rate of 11 3 per 1000 and included 10 from whooping-cough 9 from infantile diarrhœa, 3 from diphtheria, 2 from scarlet fever and 1 from enteric fever The 74 deaths in Edinburgh were equal to a rate of 11·6 per 1000 and included 3 from infantile diarrhœa and 2 from diphtheria.

Irish Towns —The 88 deaths in Dublin corresponded to an annual rate of 11 5 or 1·0 per 1000 below that recorded in the previous week, and included 7 from infantile diarrhœa, 2 from whooping-cough and 1 from diphtheria The 77 deaths in Belfast were equal to a rate of 10·2 per 1000 and included 6 from infantile diarrhœa and 1 each from enteric fever and measles

LITERARY INTELLIGENCE —The sixth edition, revised and enlarged, of "Tropical Diseases," by Sir Patrick Manson is announced by Messrs Cassell and Co In view of the rapid advances in the study and treatment of tropical diseases, the author has subjected the book to a thorough revision The chapter on Mosquitoes and the sections on Tsetse Flies and Ticks have been brought up to date by Lieutenant-Colonel Alcock, of the London School of Tropical Medicine

Medical News.

UNIVERSITY OF CAMBRIDGE —At the examination in Sanitary Science held recently the following candidates satisfied the Examiners in both parts of the examination —

Alfred John Gibson Captain R.A.M C Gerald Bovell Mason Captain R A M C ; and Donald Wainwright.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND —At the Second Professional Examination in Anatomy and Physiology held on Sept 27th and 28th and Oct 1st and 2nd 79 candidates presented themselves, of whom 55 were approved and 24 were rejected The following are the names and schools of the successful candidates —

Thomas Adam St Bartholomew's Hospital Marjorie Muriel Sibley Bartlett and Grace Mary Beaven London School of Medicine for Women William Ryding Bennette and Walter Bowler Liverpool University; Percy Croad Brett, St Mary's Hospital John Piercy Brown Liverpool University Thomas Harold Burlend University College Cardiff; Kenneth Entwisle Bury St. Thomas's Hospital John William Chadwick Manchester University Sarah Annie Cooper King's College Philippe Couacoud Guy's Hospital Charles Owen Davies Liverpool University Edith Margery Pearce Davies London School of Medicine for Women Harold Spencer Davies, University College Cardiff and St Bartholomew's Hospital Michele Arcangelo Distaso Naples University; Kenneth Henry Douss and Mohammed Nour El Din St Bartholomew's Hospital Ralph Wilfrid Fairfax King's College Arthur John Gardham University College Frederick John Good and Barnett Gould London Hospital Egerton Charles Grey Guy's Hospital Sydney Hazeldine University College Frank Heber London Hospital George Hubert Howe Guy's Hospital William Vincent Hughes St Mary's Hospital Edgar Francis Job Jones Cardiff and St Mary's Hospital John Jones Liverpool University and University College Thomas Trefor Jones Manchester University Francis Knoyle, Middlesex Hospital Gerald Joseph Wyld McMichael Birmingham University and University College Montague Maizels University College James Aird Morton St Bartholomew's Hospital Hussein Yosrat, University College and St Bartholomew's Hospital Cyril Augustus Paulusz, Ceylon Medical College Joseph Proujansky London Hospital Mary Colegrave Prideaux London School of Medicine for Women Beresford Tom Richards Birmingham University Leonard Ignatius Roberts Madras and Middlesex Hospital Harold Whillito Robinson London Hospital Frank Paul Schofield St. Bartholomew's Hospital Samuel Leon Szpigner London Hospital Joseph Gillison Tait, Edinburgh University Edgar James Targett Birmingham University Harold Edwin Thomas University College Leslie James Timings Birmingham University William Henry Turner Guy's Hospital Madeline Hilda Jane Umpleby London School of Medicine for Women Harold John Vane-Sutton Middlesex Hospital Abram Adolf Weinger Paris and King's College, Effie Adela Wharton London School of Medicine for Women John Stanley White St. Bartholomew's Hospital Octavia Margaret Wilberforce Royal Free Hospital and Charles Florance Young London Hospital

ROYAL COLLEGE OF SURGEONS OF ENGLAND ANNUAL MEETING OF FELLOWS AND MEMBERS —A meeting of Fellows and Members will be held at the College on Thursday, Nov 15th, at 3 o'clock P M, when a report from the Council will be laid before the meeting Fellows and Members can obtain copies of the report on application to the secretary, and can, if they so desire, have their names placed on the list of those to whom the report is sent annually Motions to be brought forward at the meeting must be signed by the mover, or by the mover and other Fellows and Members, and must be received by the secretary, Mr S Forrest Cowell, not later than Nov 6th A printed copy of the agenda will be issued on or after Nov 13th to any Fellow or Member who may apply for one

SOCIETY OF APOTHECARIES OF LONDON —At examinations held recently the following candidates were successful —

PRIMARY EXAMINATION PART I

Biology —W H Shipway Bristol and R S Thomas Cardiff

Materia Medica and Pharmacy —J A Marriott and J Yates Manchester

PRIMARY EXAMINATION PART II

Anatomy —M L Barst, London Hospital G M Beaven Royal Free Hospital H L. Bowen Guy's Hospital J A Cohen King's College C R Corfield Manchester A H G Down University College M A. K El Hennawy St. Mary's Hospital G E W Felce Guy's Hospital A Furness and G Furness Manchester W E K Kirby University College J Kershaw Manchester M S Mahmud Liverpool G L. Meachim and E G Parkinson Manchester P L Richardson Guy's Hospital, G W Robinson King's College E Savage Cardiff and St. Bartholomew's Hospital H. E Suter St Mary's Hospital and A Williams Bristol

Physiology —M L Barst, London Hospital G M Beaven Royal Free Hospital H Brown Liverpool C R Corfield Manchester G C W Curson Guy's Hospital D J Davies Cardiff and St. Bartholomew's Hospital A H G Down University College G B W Felce, Guy's Hospital, A. Furness and G Furness Manchester J A. Hart, London Hospital M A R. Khalifa, Guy's Hospital J Kershaw and G L. Meachim, Manchester E Savage Cardiff and St Bartholomew's Hospital J H Sullaiman Guy's Hospital and H E Suter St Mary's Hospital a scheme and the absence of an established local authority a combined and permanent scheme cannot at present be seriously considered any scheme now proposed must deal only with liquid trade wastes He first deals with permanent works for the safe disposal of offensive trade refuse and then refers to the method adopted by one firm of distributing its wastes over limited areas of land and afterwards cultivating the ground with good results Although the land is waterlogged at a depth of 3 to 4 feet he is of opinion that with an amply increased area of land, and the systematic workings and cultivation of the land over which the liquid was essayed disposed of better results can be obtained This is only suggested as a tentative measure with a view to the immediate suppression of pollution. The trade wastes at present discharged into the river the most serious source of pollution should be diverted to the land for final treatment The effluent from a factory within the borough is also considered this effluent is different in character smaller in quantity and less offensive The matter has later come under the consideration of the Natal Fisheries Board and it was resolved that the Central Government should undertake the construction and equipment of a system of sewerage, without treatment providing for an outflow of sewage into the sea, and that the Central Government should reimburse itself by means of a sewerage rate to be imposed on the users of the system With the developments which may be expected in the district at the head of Durban Bay the question may become a large and complicated one and it was held that any scheme undertaken should provide for the future requirements of the district

From the above account it will be seen that a position of some difficulty has arisen in regard to fish conservation public health, and social amenities and it is to be hoped that a satisfactory settlement will be reached

WEIHAIWEI

Sir J H Stewart Lockhart, K C M G Commissioner of Weihaiwei—the territory leased to Great Britain by China in 1898—in his report recently received at the Colonial Office for the year 1916 states that the inhabitants (147,177) were as well behaved and industrious as usual and their health excellent In the hospital at Port Edward there were 7799 out patients and 192 in patients and the number of operations performed was 329 At Wenchuantang Hospital 3332 new cases were seen In the hospital on the Island of Liu Kung there were 2595 out patients and 22 in patients the total attendances were 6625 and 86 operations were performed During the year 5339 persons were vaccinated

The number of opium smokers certified by the Government medical officers to be persons whose life or health would be endangered by a sudden cessation of the use of opium was 36 as compared with 38 in 1915 the average age of the licencees being 60 The number of convictions under the Ordinance prohibiting the importation and smoking of opium was 63 as compared with 59 in 1915 The highest temperature was 96 F in June and the lowest 12° in December Rain or snow fell on 69 days The average rainfall in 16 years up to the end of 1916 was 29·43 inches the highest fall being 47 70 inches in 1914 and the lowest 15 76 inches in 1900

I O H asks Has any medical man seen or heard of harm resulting from the continuous administration of 0·5 gramme aspirin twice or thrice daily over a period of three months or more?

COMMUNICATIONS not noticed in our present issue will receive attention in our next

Medical Diary for the ensuing Week

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W

MEETINGS OF SECTIONS

Wednesday Oct. 17th.

HISTORY OF MEDICINE (Hon. Secretaries—J D Rolleston Charles Singer): at 5 P.M

[illegible] (at [illegible] P.M.)

[illegible]

Sir William Osler: Note on Boerhaave's Position as a Scientific Observer

Prof L C Van Leersum (Amsterdam): Two of Boerhaave's [illegible]

Dr Henry Barnes On Consultations with Boerhaave (Extracts from the Notebook of a Carlisle [illegible])

Lt Col. D'Arcy Power Boerhaave's Letters to [illegible]

Thursday Oct. 18th.

DERMATOLOGY (Hon Secretaries—J [illegible] McDonagh E MacCormac Acting Hon Secretary—S E Dore): at 5 P.M.

[illegible]

Friday Oct. 19th.

ELECTRO-THERAPEUTICS (Hon Secretaries—E P Cumberbatch [illegible]

[illegible]

[illegible] D Harris [illegible]

LONDON DERMATOLOGICAL SOCIETY, St John's Hospital, 49 Leicester-square W C 2.

TUESDAY —4 15 P.M Cases sent for Consultation Demonstration of Pathological Specimens. 4 30 P.M., Opening Address—Dr L. Williams The Real Dermatology 5 P.M. Exhibition of Clinical Cases

ROYAL MICROSCOPICAL SOCIETY 20 Hanover-square W 1

WEDNESDAY —8 P.M Papers:—Mr H. Sidebottom: Report on the Recent Foraminifera dredged off the East Coast of Australia by W B Thornhill H.M S *Dart* Station 19 (May 14th, 1895) Lat. 29° 22' S Long 153° 57' E 465 fathoms.—Mr F M. Duncan On Mounting and Preserving Marine Biological Specimens

SOCIETY OF TROPICAL MEDICINE AND HYGIENE 11, Chandos-street Cavendish square, W

FRIDAY —5.30 P.M. Presidential Address:—Sir David Bruce. C.B. Tetanus—Analysis of 1000 Cases Followed by a discussion.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST GRADUATE COLLEGE West London Hospital Hammersmith road, W

MONDAY —2 P.M Medical and Surgical Clinics. X Rays. Mr Gray Operations Mr B Harman Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY —2 P.M. Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet Diseases of the Skin.

WEDNESDAY —10 A.M. Dr Saunders Diseases of Children. Dr Banks Davis Operations of the Throat Nose, and Ear 2 P.M. Medical and Surgical Clinics X Rays Mr Pardoe Operations.

THURSDAY —2 P.M. Medical and Surgical Clinics. X Rays Mr Gray: Operations. Mr B Harman: Diseases of the Eye.

FRIDAY —10 A.M. Dr Simson Gynæcological Operations 2 P.M., Medical and Surgical Clinics X Rays. Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear Dr Pernet Diseases of the Skin.

SATURDAY —10 A.M. Dr Saunders: Diseases of Children Dr Banks Davis Operations of the Throat Nose and Ear Mr B Harman: Eye Operations 2 P.M. Medical and Surgical Clinics X Rays Mr Pardoe Operations

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN 49 Leicester-square W C

TUESDAY —4 P.M Dr J L. Bunch Salvarsan and Syphilis

WEDNESDAY —5 P.M. Capt W Griffith, R.A.M C Skin Disease in the Army

THURSDAY —5 P.M Chesterfield Lecture:—Dr M. Dockrell: Baldness and its Treatment.

METEOROLOGICAL READINGS

(Taken daily at 8.30 a.m. by Steward's Instruments)

THE LANCET Office Oct 10th, 1917

Date.	Rain fall	Solar Radio in Vacuo	Maximum Temp. Shade.	Min. Temp	Wet Bulb	Dry Bulb	Remarks
Oct 4	—	61	61	58	60	61	Raining
5	0·39	87	54	45	45	46	Fine
6	0·12	84	52	43	42	43	Overcast
7	—	80	59	37	39	41	Raining
8	0·17	75	57	41	45	48	Fine
9	0·21	82	55	48	47	50	Fine
10	0·01	80	51	40	41	42	Raining

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war

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The following journals, magazines &c., have been received:—Journal of the Missouri State Medical Association British Journal of Inebriety Edinburgh Medical Journal Journal of Laryngology Rhinology and Otology Medical Review Canadian Practitioner and Review Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris Dominion Medical Monthly British Journal of Dental Science Archives of Pediatrics &c

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff It is urgently necessary that attention should be given to this notice

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office

Lectures, original articles, and reports should be written on one side of the paper only *and when accompanied by blocks it is requested that the name of the author and if possible of the article, should be written on the blocks to facilitate identification*

Letters whether intended for insertion or for private information must be authenticated by the names and addresses of their writers—not necessarily for publication

We cannot prescribe or recommend practitioners

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub Editor"

We cannot undertake to return MSS not used

Offices 423, STRAND, LONDON, W C 2.

Hospital for Women Soho-square W —Anæsthetist Salary £1 1s per attendance

Liverpool Infirmary for Children —Two Resident House Physicians for six months Salary at rate of £90 per annum each with board &c

Netley Welsh Hospital —Medical Officer

Newcastle upon Tyne, Royal Victoria Infirmary —Four House Physicians five House Surgeons two Accident room House Surgeons House Surgeon to Aural and Ophthalmic Department, House Surgeon to Gynæcological Department House Surgeon to Skin and Venereal Department and House Surgeon to Out patient Dressing Department

Oldham Royal Infirmary —Third House Surgeon Salary £225 per annum with board &c

Prince of Wales s General Hospital, Tottenham N —Senior House Surgeon Salary at rate of 7 guineas per week with board &c

Queen s Hospital for Children Hackney road Bethnal Green E —House Physician Casualty House Surgeon and House Surgeon for six months Salary £100 per annum with board &c

Reading Royal Berkshire Hospital.—House Surgeon for six months Salary £250 per annum with board &c.

Richmond Surrey, Royal Hospital.—Refractionist. Salary £25 per annum

Royal National Orthopædic Hospital, 234 Great Portland street W —Resident House Surgeon Salary £100 per annum with board &c

Salisbury General Infirmary —House Surgeon. Salary £150 per annum, with board &c

Sheffield Royal Infirmary —House Physician. Salary £120 per annum with board &c.

Shoreditch Infirmary and Workhouse.—Senior Assistant Medical Officer and Junior Assistant Medical Officer Salaries £350 and £300 per annum respectively with board &c

Shrewsbury Royal Salop Infirmary —House Physician Salary at rate of £200 per annum with board &c

Stoke on Trent County Borough of —Female Assistant Medical Officer Salary £350 per annum

Truro Royal Cornwall Infirmary —House Surgeon Salary £150 per annum with board &c

Walsall and District Hospital.—Female Assistant House Surgeon and Anæsthetist Salary £175 per annum with board, &c

West Bromwich District Hospital.—Senior House Surgeon unmarried Salary £160 per annum with board &c.

Winchester, Hampshire County Council.—Temporary Assistant County Medical Officer of Health Salary £400 per annum.

Wolverhampton and Midland Counties Eye Infirmary —House Surgeon. Salary £150 per annum with board &c

The Chief Inspector of Factories, Home Office, London S W , gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Gunnislake Cornwall, and at Muirkirk Ayr

Births, Marriages, and Deaths.

BIRTHS

Bell.—On Oct 6th at Ravenscroft Luton the wife of Captain R D Bell R A.M C of a daughter

Blaxland —On Oct. 4th at the Surrey street Nursing Home Norwich the wife of Jasper Blaxland (Captain R A M C T) of a son

Bramwell.—On Sept 27th at Grosvenor-crescent Edinburgh the wife of Dr Edwin Bramwell, of twin sons

Caddy —On Oct 3rd, at Scarborough the wife of Adrian Caddy F R C S of a son

Caldwell —On Oct. 6th at Orcheston Wilts the wife of Captain J R Caldwell R.A.M.C of a daughter

Hands —On Oct 5th at Glendalough Totland Bay I W the wife of C H Hands M B B Ch Oxon of a son.

Norman —On Oct 3rd at Chigwell Hall Chigwell (the residence of her parents) the wife of Captain N F Norman, R A.M C of a daughter

Orton —On Oct 7th at Gladwyn Shoot-up-hill Brondesbury N W the wife of Lieutenant W H Orton R A.M C of a son

Pain —On Oct 4th at a nursing home Newcastle-on Tyne the wife of Dr Arthur Pain of Durham of a daughter

Sheldon —On Oct. 7th at Chepstow Villas W the wife of W Sirr. Sheldon M R.C S L.R.C P of a daughter

Sherris —On Sept. 24th at Ripon Lodge Denmark hill the wife of Captain Cyril Sherris R.A M C of a daughter

MARRIAGES

Craig—Waldron —On Oct 3rd at the Cathedral Belfast James A Craig F R C S Eng University square Belfast to Blanche daughter of J R Waldron The Red Cottage Hythe Hants

Gray—Ferguson —On Oct 5th at St Mary Abbot s Kensington Adam Gray M D Aberd Captain R A.M C., to Florence Joan second daughter of R Bruce Ferguson M A M D Cantab D.P H New Southgate

Lithgow—Balfour.—On Oct. 2nd at the Parish Church Tetbury Major Ernest Lithgow R A.M C. and R F C to Doris elder daughter of Lieutenant Colonel A M Balfour D S O R F A. and Mrs Balfour of The Close, Tetbury

DEATHS

Field —On Sept 28th died of wounds Hassell D Field, Captain. R A.M C

Mackenzie.—On Oct 4th killed in action Henry Deedes Nutt Mackenzie M D R.A M.C attached R F A aged 48

Pettinger.—On Oct 6th at the Military Hospital Aldershot of pneumonia, James Wilson Pettinger B A M B Cantab Captain R.A M C aged 43.

Webb —On Sept 29th at The Haven Cliff road Falmouth Dr Hy Pelham Webb

N B —A fee of 5s is charged for the insertion of Notices of Births Marriages, and Deaths

Notes, Short Comments, and Answers to Correspondents.

A DOUCHE LAVATORY ON A MAN OF WAR

In the *Archives de Médecine et Pharmacie Navales* for August Dr Bellile, of the French Navy gives an account of the arrangement of the douche lavatory on board the French man of war *Amiral Charner* The old scheme in the French Navy was for the men to wash in buckets, one probably for each mess (There was an old saying in another Navy about the mess boy getting the first wash in winter and the last in summer, but those days are, of course, long past and gone) In 1902 an order came out that washing in buckets was forbidden, and that douche taps were to be fitted and supplied with warm water The wash places were, however, not fitted, not even in the new ships. Individual ships had some advances Thus a basin was served out to each man in the *Duguay Trouin* and a few other ships In 1909 again did the spirit of cleanliness stir at headquarters, and in 1911 Dr Bellile got an installation fitted in the *Amiral Charner* which became the pioneer ship The plant as described should be very effective From a tank on the deck overhead holding 2400 gallons, heated in winter by a coil of steam pipe, there are led two pipes to the compartment below, which can also be steam heated in winter The pipes are led in a U bend round the room and a discharge with a rose is fitted every 2½ feet The rose is made of copper so that it may not rust, and there are three holes (2 millimetres square) in the first, four in the second, and so on, to allow equal supply of water at each of the 35 roses The douches, which are highly approved by the men, scarcely use any more water than the former buckets used and take up no more room Moreover, it is much easier now for the sailors to keep clean

DISCHARGE OF EFFLUENTS FROM FACTORIES INTO DURBAN BAY

The position arising from the discharge of liquid trade wastes into Durban Bay is considered in the report of the Natal Fisheries Department for 1916,[1] both as regards the effect on fish life and from a public health standpoint This report relates the work of the department during the year under review, and gives full financial and statistical information (largely tabular) of the fishing industry in Natal, indeed, the whole report reflects the interest taken in developing and fostering this industry Mr Godfrey W Dick, principal fisheries officer and secretary to the Natal Fisheries Board, says that a certain measure of success has attended the enactment of protective measures and their energetic enforcement by the inspector so far as conservation of fish life in Durban Bay is concerned, but he is constrained again to record the strong opinion that the pollution which takes place at the head of the bay has reduced the value of the work of the department very considerably The position is engaging the serious attention of the Durban municipality, the Port Advisory Board, and Natal Fisheries Board

In an annexure to the report headed Clairmont Flats Nuisance " Mr J Fletcher, borough engineer and Dr P Murison medical officer of health relate the source of the trouble and suggest remedies The liquid trade wastes come from a chemical business and two sugar refineries near South Coast Junction outside the borough of Durban The considerable wastes from two of these concerns are conveyed by pipes and open channels and finally discharged on to a flat area of land about three-quarters of a mile from the head of Durban Bay The third business conveys its wastes direct to the Umhlatuzan River The trade wastes which are allowed to distribute themselves over the Clairmont Flats form in small depressions pools and in larger ones ponds extending over acres Recently one firm has made an effort to conduct the wastes into rectangular pits (over 150) thus limiting the area over which the wastes flow The subsequent decomposition of this highly putrescible material is associated with the evolution of most objectionable gases and vapours giving rise to discomfort and annoyance to the burgesses of Durban and having in a considerable number acted injuriously on their health This liquid trade waste is declared to be 40 times as strong as ordinary sewage It is stated that no process of final disposal can be accepted which does not provide for special preliminary treatment and that the question of final disposal through the sewerage system of the borough of Durban cannot be entertained It is concluded that the special treatment of liquid trade refuse combined with future treatment of the domestic sewage of this outside district can be more effectually and economically dealt with by sewage works provided within the district, and by which it is feasible to obtain a non putrescible effluent which could be safely discharged into the watercourses leading into the bay In a later report Mr Fletcher deals with tentative measures to abate the nuisance as owing to the area being sparsely populated the cost of

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[1] Report of the Natal Fisheries Department 1916: Coast Fisheries. Pietermaritzburg: P Davis and Sons, Limited 1917 Pp. 40 Price 1s 9d.

The Relations OF TUBERCULOSIS TO WAR CONDITIONS

WITH REMARKS ON SOME ASPECTS OF THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS[1]

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THE disturbed distribution of population caused by the war renders it impracticable to give accurate local death rates for tuberculosis in either sex or for tuberculosis in men for the whole country Apart from such rates, the figures as to total deaths from pulmonary tuberculosis in England and Wales in recent years are, however, instructive The table below shows that, comparing the experience of 1913, the last complete year before the war, with subsequent years, the deaths from pulmonary tuberculosis increased by 1582 in the year 1914, by 4621 in 1915, and by 4490 in 1916, the third year of war

The increase was not confined to one sex Comparing recent years once more with 1913 male deaths from pulmonary tuberculosis increased by 778 and female deaths by 804 in the first year of war, male deaths by 2596 and female deaths by 2025 in the second year of war, and male deaths by 2204 and female deaths by 2286 in the third year of war

England and Wales

Year	Deaths from pulmonary tuberculosis			Deaths from other forms of tuberculosis			Deaths of persons from—		
	Males	Females	Total	Males	Females	Total	Pneumonia	Bronchitis	Influenza
1911	21 985	17,247	39,232	7,242	6 646	13 888	37 642	36 555	4 343
1912 ..	21,563	16 515	38,078	6 253	5 730	11 983	37 348	39 735	5 354
1913 ...	21 034	16 021	37 055	6 623	5 798	12,421	37 530	39,227	6,394
1914 ..	21,812	16 825	38,637	6,264	5,397	11 661	40 070	40,189	5 954
1915 ...	23 630	18 046	41,676	6 715	5 904	12 619	48,874	50,974	10 494
1916 ...	23 238	18 307	41 545	6 458	5 825	12,283	37 916	43 412	8,791

The increased mortality from pulmonary tuberculosis having been shared by both sexes it must be inferred that conditions arose adversely affecting the health of persons of both sexes in these years

It is natural to assume that the altered conditions of life during war time were concerned in producing this effect, but this hypothesis needs to be considered in relation to collateral experience of other diseases as shown in the above table

The teaching of this table is brought out in the following table in which the experience of deaths in 1913 under each disease is stated by the relative figure 100

England and Wales Relative Mortality in 1913 (= 100) and in Subsequent Years from Certain Disease

Year	Pulmonary tuberculosis	Influenza	Pneumonia.	Bronchitis
1913 ..	100	100	100	100
1914 ..	104	93	107	103
1915	112	164	130	130
1916	112	138	101	111

It will be seen that increased mortality from pulmonary tuberculosis was associated in 1915 and 1916 with still more excessive mortality from influenza. This association is no new feature It was seen markedly in the years 1890-91-92 and again in 1899 1900 The experience of 1915-16 is the third occurrence in recent years of this coincidence, and there can be no doubt that influenza is a most dangerous complication of pulmonary tuberculosis

It is noteworthy that the deaths from pulmonary tuberculosis in both 1915 and 1916 were 12 per cent in excess of those in 1913, but that in 1916 the deaths from pneumonia had ceased to occur in excessive numbers, while an excess in deaths from influenza and from bronchitis continued on a smaller scale than in 1915 Whether this justifies the conclusion that the influenza element in the causation of excessive mortality from pulmonary tuberculosis was shared in 1916 by special war conditions to a greater extent than in 1915 cannot be stated with certainty Probably both in 1915 and 1916 war conditions have borne an important part in the excessive mortality from all the diseases enumerated in the above table There has been inter communication between different localities on a much larger scale than in normal times, and catarrhal infections—including cerebro-spinal fever, as well as the above mentioned diseases—have been rife

It has been noted that the excessive mortality from pulmonary tuberculosis has affected both sexes In both sexes the conditions favouring this excess, apart from catarrhal infections, have probably been similar

Men in the Army and men and women in industrial employment, notwithstanding the efforts to minimise these results have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease. A large number of unrecognised or partially recovered consumptives have entered the Army or have been employed at high wages in munition and other works In many instances there have been overwork and excessive exposure to irritating dust Commonly also, owing to great migrations of military and civil population, there has been overcrowding under conditions unfavourable to health These are the outstanding facts They will need to be further considered in the light of the current year's experience

The experience in this country appears to coincide with that of the continental countries engaged in the present war In all of them, so far as can be gathered from official information, tuberculosis appears to have been more rife and more fatal than prior to the war It is proper to state that this unfavourable record would almost certainly have been worse but for the organised efforts to improve housing conditions in areas the population of which has been swollen by war work, and especially for the efforts made by the Government to secure improved conditions of work for munition workers as well as to cope with the special housing difficulties which have arisen I may draw attention furthermore, to the fact that notwithstanding the increase in the population of England and Wales in the interval, the deaths from pulmonary tuberculosis were fewer than in so recent a year as 1902

Tuberculosis and the war—In May, 1916, the Local Government Board, after consultation with the Army Council, circularised the local authorities concerned in tuberculosis schemes, asking them to arrange for their tuberculosis officers to assist the military authorities in the examination of recruits suspected to be suffering from tuberculosis The action taken in response to this appeal has been of material assistance to the military authorities

About the same time the Board issued a general Order extending their Tuberculosis Regulations and making it obligatory on every medical officer of health to send to the Army Council London, a list of all male persons between the ages of 18 and 45 who had already been notified to the medical officer of health as suffering from tuberculosis, and to keep the list up to date by the sending of weekly lists of newly notified males between the same ages to the Army Council By this means it has been possible for the Army Council to inform each Medical Board of the names of tuberculous men in their respective areas

REVIEW OF THE POSITION AS TO THE ADMINISTRATIVE CONTROL OF TUBERCULOSIS

In view of the association of war conditions with considerable increase of pulmonary tuberculosis it appears desirable to gives a summarised statement of the action specially directed in recent years to the control of tuberculosis Prior to 1911 excellent local work had been done in a relatively small number of areas in direct efforts to control the spread of tuberculosis in addition to the previous

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[1] From the Annual Report of the Medical Officer of the Local Government Board for [illegible] with permission of H.M. Stationery Office

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practice is overworked, these conditions are not fulfilled. That they have not been fulfilled generally, apart from the war, is shown by evidence derived from many areas

Belated notifications —Notification is often delayed when the case has been recognised and for this, in some areas in which the medical officer of health or tuberculosis officer takes little useful action if any, after notifications have been received, the Public Health Authority may be held responsible In previous reports it has been repeatedly urged that notification depends largely for its completeness and promptitude on its being followed by action beneficial to the patient. It has no administrative value *per se*, its utility depends on the action which follows on notification. It is only when the medical officer of health the tuberculosis officer, and the medical practitioner coöperate in securing the patient's welfare, by improving the conditions under which he lives and works by measures of cleansing and disinfection, by safeguarding the health of the patient's family, and by a course of institutional treatment when this is indicated, that the possible utility of notification is realised

At present, cases of tuberculosis which have been under medical care sometimes are not notified until after the death of the patient, other notifications may be received by the medical officer of health within a few weeks or months of death, and the patient may have been ill, with symptoms which pointed to tuberculosis, for a year or two before his case is notified

The failure to notify is especially great for cases of non-pulmonary tuberculosis, and even when these cases are notified, often no systematic inquiry is made by the medical officer of health or the tuberculosis officer Systematic family inquiry in such cases not infrequently leads to the discovery of overlooked cases of pulmonary tuberculosis

Failure to notify may also be due to non recognition of tuberculosis by the medical practitioner in attendance This may be due to the medical practitioner being overworked It is often owing to the tuberculosis officer not being in touch with him and consequently opportunities for consultation have not been embraced If greater coöperation were the rule, a much higher proportion of cases would be recognised at the earlier stage when no sputum is available for examination and the tuberculous character of a large number of cases of chronic bronchitis' would be recognised

It is well known that failure to recognise a case of pulmonary tuberculosis until tubercle bacilli are detected in sputum implies that the disease has made considerable progress In my annual report for 1913-14 I gave figures illustrating the fact that even when there is sputum its examination as a means of diagnosis is utilised to a most variable extent in different towns Failing this examination a large number of cases of pulmonary tuberculosis continue for long periods to be treated as bronchitis

(3) *The tuberculosis officer* —Few of these officers had been appointed in 1912 but in June 1915 the number had increased to 238 most of them recently appointed During the last three years they have been largely replaced by part-time medical officers and the work has been reduced to a minimum The experience gained in the short time during which tuberculosis officers have been at work enables a number of points to be stated by way of indicating the lines for future development rather than of criticism of past work. The new service in some areas has been regarded with suspicion by medical practitioners and little use has been made of the facilities for consultation with the tuberculosis officer at the dispensary or elsewhere There was an insufficient number of doctors for the new service with adequate experience of the diagnosis and treatment of tuberculosis on modern lines and some of the less experienced did not secure the confidence and coöperation of private practitioners This condition which was unavoidable at first is only temporary

The medical officer of health is responsible for the execution of the work under the Board's Tuberculosis Regulations and his relation to the tuberculosis officer has not always been satisfactory This has often been due to the tuberculosis officer concerning himself with the treatment of the patient while giving little attention to his hygienic circumstances It is unnecessary to repeat remarks made in previous annual reports on this point, but one of the first tasks to be undertaken when normal conditions are resumed will be to secure more complete coördination of official tuberculosis work on its therapeutic and hygienic sides

The importance of examination of home contacts has been emphasised in past reports, but this work has not hitherto been developed to an adequate extent In some districts so far it has remained entirely in abeyance, and during the war the Board, in order to enable doctors to go on military service, have been compelled to inform public health authorities that this contact work may be intermitted

In some, especially in smaller, districts the medical officer of health has not carried out his duties completely under the Tuberculosis Regulations, and both from his standpoint and from that of the tuberculosis officer there is need of more complete coöperation than has hitherto been secured

What is needed is that the organisation of the tuberculosis dispensary shall be in close touch with the special work of the medical officer of health Both are concerned in home visiting and in supervision of the patient at home, and the visitation should be so arranged as not to be duplicated The extent to which the tuberculosis officer has succeeded in securing continuous touch with general practitioners has varied greatly in different parts of the country The early detection of cases of tuberculosis and their successful treatment with the regular supervision needed in their interests and that of their families, have followed naturally where the collaboration between general practitioner and tuberculosis officer has been secured

(4) *Sanatoria* —Pulmonary tuberculosis is the greatest cause of disablement and mortality in adult life It causes one-third of the total mortality during a large part of the working years of life. It is furthermore, a disease which is preventable For these reasons its selection for a special benefit under the National Insurance Act is justified in the interest of national efficiency Patients, especially workers suffering from tuberculosis call for treatment The only question is as to the most efficient methods of treatment. There is universal medical agreement on certain points. Open-air conditions of life, judicious feeding, and regulated rest and exercise or work are necessary to give the best prospect for the patient's recovery or improvement, and his hygienic training has a high value for the patient while greatly increasing the safety of those about him Even if the patient is not likely to recover, all will wish him to receive the treatment best directed to improve his health or failing this, medical assistance and nursing under favourable conditions during his progressive decline. The objects to be aimed at are cure of the patient, or if this is improbable his treatment under conditions conducive to his comfort, and securing others from infection Broadly speaking sanatoria are intended to fulfil the first condition hospitals the second to the extent to which treatment in a residential institution is required

These being the objects in view the question is whether sanatorium treatment as hitherto developed, has given the best results obtainable in the interest of patients and of the public The number of beds provided for the treatment of tuberculosis under schemes of public health authorities has doubled since 1911 These are supposed in the main to be sanatorium beds proper For the following reasons, however a high proportion of the patients in these beds have been of what is known as the hospital type as defined below

1st The largest number of cases coming under the care of general practitioners and of tuberculosis officers are cases of advanced disease or of chronic consumption in which complete recovery cannot be expected These cases press for institutional treatment, and it is difficult to refuse it even though the beds available are more suitable for patients in the earlier stages of disease The fact that a high proportion of these patients are insured persons claiming sanatorium benefit increases the difficulty under this heading Although Insurance Committees are entitled to refuse residential treatment for tuberculous insured persons and frequently do so on the advice of the tuberculosis officer there is a natural tendency to give this even when it is scarcely expected that improvement will follow

2nd. When such patients are received into a sanatorium there is a strong tendency for the medical officer to ask for repeated prolongation of treatment even when his better judgment would oblige him to certify that permanent benefit is improbable Not infrequently the same bed is occupied by a single patient for six or nine months who should have been replaced by earlier cases of disease requiring a shorter period of treatment and likely to receive permanent benefit general measures, such as improved sanitation, better housing, more satisfactory nutrition, and especially the hospital treatment of a considerable proportion of sickness generally, including a large proportion of the advanced cases of tuberculosis The important measures directed to the reduction of infection from bovine infection are not included in this analysis, but it may be noted that the final report of the last Royal Commission on Tuberculosis appeared in 1911, and that although the prevention of the possibility of human infection from cow's milk is still very incomplete, the pasteurisation or boiling of milk for human consumption is more generally practised than in the past The Milk and Dairies Act of 1914 will provide after the war the machinery for much more efficient control over bovine tuberculosis

The steps towards direct administrative control of tuberculosis may be summarised as follows —

Compulsory notification of Pulmonary Tuberculosis, Poor-law cases from Jan 1st, 1909

Compulsory notification of Pulmonary Tuberculosis, Hospital cases from May 1st, 1911

Compulsory notification of Pulmonary Tuberculosis, Cases in the general population from Jan 1st, 1912

Compulsory notification of all forms of Tuberculosis, Cases in the general population from Feb 1st 1913

National Insurance Act, 1911, Sanatorium Benefit, coming into operation, July, 1912

Finance Act, 1911, provided capital of £1,116,000 in England and Wales for erection of sanatoria

The Departmental Committee on Tuberculosis reported on April 3rd, 1912, that any scheme which is to form the basis of an attempt to deal with the problem of tuberculosis should be available for the whole community and that the organisation of schemes would best be undertaken by the county and county borough councils These recommendations were adopted by the Government, which undertook to provide out of the Imperial Exchequer one half the net annual cost of schemes for the general treatment of tuberculosis which were approved by the Local Government Board Following on the above, county councils and county borough councils were invited to formulate and carry into effect schemes for the provision of institutional treatment at dispensaries and in residential institutions, and such schemes have come into operation to a greater or less extent in most areas

The extent to which schemes for the treatment of tuberculosis have come into operation may be gathered from the following comparative figures In England in 1911 local authorities (other than Poor law authorities) had about 1300 beds for the institutional treatment of tuberculosis, while there were 4200 beds in private sanatoria and voluntary institutions In June 1916, the number of beds provided by public health authorities had increased to 6072, and voluntary beds to 5821 a total of 11,893 as compared with 5500 in 1911 In 1911 there were only about 25-30 tuberculosis dispensaries In 1917 this number had increased to 371 During 1912 and 1913 the Board's officers were engaged, with varying success, in persuading county councils and county borough councils to make a beginning with the formulation and establishment of tuberculosis schemes and in the detailed negotiations as to schemes put forward by the authorities who desired to proceed These efforts in the first half of 1914 were obviously becoming increasingly successful, but the declaration of war in August soon prevented further developments of tuberculosis work and seriously crippled and reduced the efficiency of existing work The curtailment and deterioration of the work already organised necessarily became more marked as the military demands for medical officers and for institutions increased

It may be stated generally that (1) In only a relatively small number of county areas have fairly completed arrangements for the institutional treatment of tuberculosis come into operation In most county boroughs deficiency of provision is less marked (2) Even when fairly complete arrangements have been made, these have usually been in full operation for a short period only, and have been crippled more or less during 1915 and 1916

A few county borough councils, who had organised sanatorium treatment prior to the passing of the National Insurance Act, form exceptions to these statements Much excellent work has been done under the dispensary and other institutional arrangements organised by local authorities, and many patients have been restored to health and a still larger number have had their working power partially or wholly restored, while the possibility of their continuing to be foci of infection has been minimised It must, however, be realised that the schemes of local authorities as a rule have only recently been initiated, that during the stage following initiation the progress made has been somewhat slow, and that this progress has been stopped to a great extent during the war The linking up of the different agencies required to secure the full benefit of the schemes, which was being gradually organised, has also been seriously retarded by the war

The tuberculosis arrangements are closely related in every particular to the work of public health authorities, and in each of the following paragraphs the closeness of this relationship will appear The difficulties and defects of the arrangements hitherto made are set out here with a view to future action directed to their removal

These difficulties and defects may be considered under the following headings (1) With relation to the patient, (2) with relation to the private practitioner, (3) with relation to tuberculosis officers, (4) with relation to sanatoria, (5) with relation to chronic and advanced cases of phthisis

(1) *The patient* —In normal times a large proportion of consumptive patients refrain from applying for treatment until disease is fully established and they are incapacitated for work Not infrequently this means that the patient does not consult a doctor until within a few months or weeks of his death This, in part at least, is due to the conditions of private practice for the mass of the population before medical benefit under the National Insurance Act came into operation and tuberculosis dispensaries were established. Prior to this, if the patient was not a member of a "club" the fee payable to a doctor discouraged the patient from seeking advice for what appeared to be a relatively trivial ailment

Education of the public as to the need to seek for advice for protracted coughs and colds or for other symptoms suggestive of the possibility of tuberculosis is badly needed, and until the working classes have realised the importance of the early diagnosis and treatment of catarrhs and tuberculosis and of the removal of the conditions (bad housing overcrowding, dusty indoor occupations, &c) which favour these, the arrangement for coördinated measures for the treatment of tuberculosis can have only partial success

Even when an insured patient is informed by his doctor that he is consumptive, delay in receiving sanatorium benefit is often caused because of the insured patient's unwillingness to go into an institution until his 10*s* weekly sickness benefit is about to be reduced to 5*s* Then he accepts a recommendation for sanatorium treatment In such cases it often happens that hospital treatment is really required

In the three years of the present war the temptations to neglect symptoms pointing to consumption have increased, as have also temptations to conceal the fact of the existence of consumption Many consumptives have felt impelled to take their part in the national work of the war A large number of recovered or partially recovered consumptives have been fighting as soldiers Although not a few of these have been able to withstand the strain of active warfare, the majority unfortunately have broken down, and their lives have been curtailed by the great adventure In many other instances unrecognised and latent tuberculosis has been brought into activity by the strain of a soldier's life, and the records already show that the war will be responsible for material national increase in tuberculosis, with a consequent increase in the death rate from this disease

The dearth of workers and the associated high wages have led to the employment of a large number of semi invalids in industrial life The temptation of the high wages has in many instances led both men and women to refuse sanatorium treatment or other systematic treatment

(2) *The private practitioner* —The medical attendance of the majority of patients in this country is organised under the conditions of private practice whether for insured patients or others It is to the private practitioner that most patients resort and the early recognition and treatment of disease depends primarily on his skill, on his not being so overworked as to be unable to devote adequate time to the examination of each patient coming under his care, and on his willingness to refer doubtful cases for consultation with the tuberculosis officer It is not surprising that under war conditions, when nearly every doctor remaining in civilian

But sanatorium treatment and, even more important, hospital treatment of consumptives on the lines indicated in previous paragraphs must form an essential part of a satisfactory programme for the treatment and control of tuberculosis

The Local Government Board's grants to local authorities for the institutional treatment of tuberculosis have not yet reached a quarter of a million of money in any one year If to this be added the sum spent on the institutional treatment of insured consumptives after deducting the contributions of insured persons and employers, the total cost borne by Government funds is certainly less than half a million sterling per annum This is apart from local expenditure

Housing and institutional treatment for tuberculosis cannot properly be regarded as alternatives They are necessary complements to each other, and there must be increased expenditure in both directions Housing is a problem in two divisions For the healthy and for the sick. Special housing in institutions is needed for the sick when the care which their condition requires is not available in the home of the patient This is true whether the patient will be cured by the institutional treatment or not But it is the duty of administrators so to arrange the conditions of admissions to and continued treatment in, institutions that the provision *will be used in the most economical and efficient manner* possible, consistent with the welfare of the patients concerned

STERILISATION BY DAKIN'S SOLUTION AND THE OCCURRENCE OF SECONDARY HÆMORRHAGE

BY E F BASHFORD, M D EDIN ,
CAPTAIN R.A.M.C
(*From a Surgical Observation Hut in France*)

SINCE the treatment of septic wounds is of prime importance and great improvements are being effected in it, no excuse is necessary for reinvestigation by a novel method of the relative potency of certain antiseptics which are fashionable at the present time An impartial judgment from time to time of the value of the methods in use and of others proposed proves of direct benefit to the wounded under treatment Such inquiries are indeed required to safeguard the patient against methods which although new or modifications of older procedures are not based on adequate trials and against methods which the wounded have seen described in the lay press and feel aggrieved at not receiving

Object and Nature of Present Inquiry

The ideal antiseptic has yet to be found, all those in use possessing certain disadvantages The present inquiry had its origin in the question of whether or not secondary hæmorrhage is more frequent under some forms of treatment at present in vogue than in others suspicion having been aroused that the walls of healthy vessels lying exposed in wounds might be corroded by the antiseptic solution employed The histological investigation of vessels from which secondary hæmorrhage had occurred has no lent support to this suspicion, as without exception, they were found to have suffered previous damage In a few cases the damage was purely physical and in one instance this physical injury was associated with an aseptic thrombosis In most cases septic thrombosis was present In yet others the bleeding point was surrounded by granulations showing that corrosion was not the cause of the hæmorrhage In another paper I have discussed the frequency of thrombosis in association with infected wounds [1]

Resort was had to experiment with chloramine Dakin's solution, Lorrain Smith's solution (eusol) and flavine For purposes of comparison parallel experiments were made with iodine and mercury perchloride

The method adopted consisted in the immersion of living tadpoles in various dilutions of the substances to be tested one advantage thus gained being the elimination of the question of soaking the skin with water such as occurs when watery fluids are applied to wounds The experiments were performed at a temperature of 24°-26° C The following observations were made

1 By snipping off the tail, some distance from the anus, and dropping it into broth, it was first ascertained that the skin of the tails of the tadpoles yielded a heavy growth of Gram positive and negative organisms—bacilli streptococci, and also coliform bacilli—and were therefore suitable for this investigation

2 The lethal concentrations of the several solutions for the tadpole were then determined, and the condition of the tails as regards sterility ascertained immediately after death, the nature of the lethal action being left out of consideration as immaterial

3 When a minimum dilution, sterilising the skin of the tail at death had been found, a new series of experiments was made to ascertain if sterilisation could be effected in non lethal solutions

4 Thereafter the minimum time required to sterilise the tails was ascertained, and then was compared with the time required to cause the death of the animal

5 Finally, the corroding or digestive action of the several solutions on the abdominal wall was noted

After the preceding necessary preliminary experiments had been carried out the whole series of observations could be combined simultaneously in a long series of beakers, each containing one or more tadpoles immersed in increasing dilutions of the substance or substances The accompanying tables give the results of such series of experiments

TABLE I —*Dakin's Solution (Diluted to give the Concentration of Hypochlorite shown in Column I)*

Dilution of hypochlorite	Average time required to cause death.	Condition of skin of tail at death	Minimum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 1 000	3 min	Sterile	3 min	35 min
1 2,000	6		3	3 hrs
1 : 4 000	12		5	4
1 10 000	18		5	44
1 25 000	30		10	Action absent
1 50 000	35		16	
1 100 000	60		30	
1 500 000	Alive after 24 hrs	Sterile after 4 hrs	—	
1 1 000 000		Not sterile after 24 hrs	—	

TABLE II —*Eusol (Diluted)*

Dilution of hypochlorite	Average time required to cause death	Condition of skin of tail at death	Maximum time required to sterilise skin of tail	Time required for abdominal wall to rupture.
1 : 2,000	5 min	Sterile	2 min	5 hours
1 : 4 000	6		3	Action absent
1 10 000	8		4	
1 25 000	16		5	
1 50 000	35		12	
1 : 100,000	60		30	
1 500 000	Alive after 24 hr		—	
1 1 000 000		Not sterile after 24 hrs	—	

TABLE III —*Chloramine*

Dilution of antiseptic	Time required to cause death.	Condition of skin of tail at time of death	Minimum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 50	18 min	Sterile	3 min	No appreciable solvent action
1 100	25		6	
1 200	35		10	
1 500	45		15	
1 1 000	1½ hr		25	
1 2,000	2		30	
1 4 000	2½		1½ hrs	
1 10 000	[illegible]		12	
1 100 000	Alive after 24 hrs	Not sterile.	Not sterilised	
1 500 000		„		
1 1 000 000				

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[1] [illegible] Journal of [illegible] 7

Cases of pulmonary tuberculosis requiring treatment in a residential institution may be classified as follows —

"*Sanatorium cases*"—Cases in which permanent improvement or recovery can usually be anticipated

"*Hospital cases*"—Cases in which only temporary, though possibly prolonged, improvement may be anticipated.

The hospital group will include (1) Patients who may be expected to recover considerable ability to work, (2) patients admitted for a short term for educational treatment, (3) patients with advanced disease, many of whom improve greatly under institutional treatment, (4) advanced cases requiring continuous medical care and nursing Cases requiring special observation for the purpose of diagnosis or to determine the best form of continued treatment

Hospital cases are such in the sense that they are not admitted with a view to the possibility of complete recovery Probably they will improve under treatment, but recovery of permanent working capacity is not expected.

The duration of treatment required under each of the above headings varies greatly During the last five years a large number of patients with chronic and advanced phthisis have been treated under conditions especially suitable for sanatorium cases, and the treatment thus given has proved unsatisfactory as regards arrest of disease If in future the best results are to be obtained from treatment of consumptives in a residential institution the decision as to the form of treatment in each case must be made solely on the medical needs of the patient In the decision the hygienic conditions of the patient's home are necessarily considered, as if these are unsatisfactory both the patient and his family suffer But if, in addition, regard is had to other considerations, and patients are chosen for sanatorium treatment on other than medical grounds, sanatorium treatment is bound to continue to give relatively unsatisfactory results

(5) *The treatment of chronic and advanced cases of phthisis* —Under present conditions a high proportion of the patients coming under treatment for tuberculosis will not recover their health permanently or completely This being so it is well that treatment of such patients should be considered from the point of view of ordinary medical treatment Every patient is entitled to treatment, whether his illness be curable or not A local authority undertaking such treatment may have regard to economy, but on the merits this must not be secured at the expense of the patient Considered from the standpoint of the patient, the treatment of a considerable proportion of consumptives in residential institutions is most desirable This is especially true for patients who are acutely ill, or ill with advanced disease, and who cannot be satisfactorily nursed in their own homes

The question of treatment in residential institutions of patients suffering from phthisis at a probably incurable stage cannot, however, be considered solely from the standpoint of the patient's own interest Nothing should be done, and nothing need be done, contrary to these interests, but public and personal interests alike point to the desirability of treating the consumptive under conditions which will minimise the possibilities of acquirement of infection by contacts

For reasons of economy, as well as because of the unwillingness of patients to leave home, a large proportion of the infective lifetime of every consumptive and the whole of the lifetime of some consumptives will necessarily be spent at home Measures for securing that he shall not be a source of massive infection to others must be reconciled with this economic consideration Much can be done to secure this in connexion with domiciliary treatment or attendance at a dispensary, when associated with the oversight of the home conditions of patients But experience has shown that in such cases home supervision is much more efficient when preceded by a short term of stay in a sanatorium or hospital for tuberculosis in which the patient is trained in the hygienic and general management of his condition, including the proper use of sputum flasks, &c Unless he is suffering from advanced disease it is advantageous for him also to be trained during this time to sleep in a shelter, preferably one of a type which can afterwards be lent out to the patient to be slept in by him at home if sufficient open space is available near his home for this purpose Much of the value of this educational treatment may be lost if the patient is not kept under helpful supervision afterwards

At a later stage of disease, when the patient is unable to work or is bedridden, the necessity of continuous care and nursing arises For the majority of patients among the wage earning classes this can seldom be given satisfactorily at home The experience of large towns shows that such patients have during the last 20 years been attended to an increasing extent in Poor law infirmaries and in special institutions, and this treatment and simultaneous segregation of patients, who would otherwise have been nursed under unsatisfactory domiciliary conditions, must be credited as being largely responsible for the decline in the death rate from tuberculosis which has occurred during the same period, notwithstanding increasing urbanisation of the population with its associated relatively high mortality from tuberculosis

Happily it is becoming more generally appreciated that no scheme for the control of tuberculosis in an administrative area can be regarded as satisfactory which does not make provision on a considerable scale for the institutional treatment of advanced cases of consumption beyond what in most areas has been so far provided

Housing in relation to the prevention and treatment of tuberculosis —Not infrequently it is assumed that in the prevention of tuberculosis improved housing is an alternative policy to the provision of sanatoria and hospitals for consumption It is also suggested that sanatoria and hospitals may in a large measure be dispensed with in the treatment of consumptive patients The two points need to be considered together, inasmuch as measures for the treatment and prevention of tuberculosis are to a large extent identical An essential part in the prevention of the spread of tuberculosis consists in housing patients under conditions in which they will not spread infection When a separate bedroom is not already available this may be done by provision of an additional bedroom at home or by removing the patient to an institution In practice both plans are desirable, according to circumstances

Institutional treatment is needed when special sanatorium treatment is required or when the patient needs skilled medical attendance and nursing which cannot be obtained at his home Satisfactory treatment is extremely difficult to organise at home both for early and for advanced cases of consumption and although much may be done to improve home conditions, this difficulty will, in large measure continue to apply for a large proportion of the total population

Statements to the opposite effect are made without adequate consideration of the general facts as to national housing At the last Census 3,139,472 persons or 8 7 per cent of the total population of England and Wales were living in dwellings containing less than one room for every two persons, there being an excess of 780 776 persons in these dwellings on this basis Of the total population 2 580 814, or 7 1 per cent, were living in one or two-roomed dwellings, and 4 429 119, or 12 3 per cent of the total population, in three roomed dwellings Under these circumstances the impracticability of providing adequate and still more of providing separate bedroom accommodation for consumptive patients is evident Satisfactory family life even for a healthy family is difficult to maintain under the above conditions The conditions become dangerous when a sick person has also to be housed, intimate contact with whom is likely to infect others The problem, in large measure, has been solved for the acute infectious diseases by establishing isolation hospitals, and although these hospitals may not have completely fulfilled expectation in the amount of reduction of infection secured, they have done great work in this direction and have made themselves indispensable under modern social and industrial conditions

In the acute infectious diseases the onset of secondary cases occurs after a few days' incubation, in pulmonary tuberculosis there may be a latent period stretching over years, and cause and effect may be difficult or impossible to connect It is, however agreed that such infection occurs, that some persons and especially the young, more easily fall victims, and that even the more resistant may fall ill from tuberculosis when exposure to infection has been protracted or when, otherwise the infection has been in massive doses

The bearing of these facts on the institutional treatment of consumptives is obvious They cannot be institutionally treated continuously even if they were willing and there is no need for residential institutional treatment during a large part of their sick life, assuming that they follow out the simple instructions in which they have been previously educated, preferably in a residential institution

But sanatorium treatment and, even more important, hospital treatment of consumptives on the lines indicated in previous paragraphs must form an essential part of a satisfactory programme for the treatment and control of tuberculosis

The Local Government Board's grants to local authorities for the institutional treatment of tuberculosis have not yet reached a quarter of a million of money in any one year If to this be added the sum spent on the institutional treatment of insured consumptives, after deducting the contributions of insured persons and employers, the total cost borne by Government funds is certainly less than half a million sterling per annum This is apart from local expenditure

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The ideal antiseptic has yet to be found, all those in use possessing certain disadvantages The present inquiry had its origin in the question of whether or not secondary hæmorrhage is more frequent under some forms of treatment at present in vogue than in others, suspicion having been aroused that the walls of healthy vessels lying exposed in wounds might be corroded by the antiseptic solution employed The histological investigation of vessels from which secondary hæmorrhage had occurred has not lent support to this suspicion, as, without exception, they were found to have suffered previous damage In a few cases the damage was purely physical and in one instance this physical injury was associated with an aseptic thrombosis In most cases septic thrombosis was present In yet others the bleeding point was surrounded by granulations, showing that corrosion was not the cause of the hæmorrhage In another paper I have discussed the frequency of thrombosis in association with infected wounds [1]

Resort was had to experiment with chloramine, Dakin's solution, Lorrain Smith's solution (eusol) and flavine For purposes of comparison parallel experiments were made with iodine and mercury perchloride

The method adopted consisted in the immersion of living tadpoles in various dilutions of the substances to be tested, one advantage thus gained being the elimination of the question of soaking the skin with water such as occurs when watery fluids are applied to wounds The experiments were performed at a temperature of 24°-26° C The following observations were made

1 By snipping off the tail, some distance from the anus, and dropping it into broth, it was first ascertained that the skin of the tails of the tadpoles yielded a heavy growth of Gram positive and negative organisms—bacilli, streptococci, and also coliform bacilli—and were therefore suitable for this investigation

2 The lethal concentrations of the several solutions for the tadpole were then determined, and the condition of the tails as regards sterility ascertained immediately after death, the nature of the lethal action being left out of consideration as immaterial

3 When a minimum dilution, sterilising the skin of the tail at death had been found, a new series of experiments was made to ascertain if sterilisation could be effected in non lethal solutions

4 Thereafter the minimum time required to sterilise the tails was ascertained, and then was compared with the time required to cause the death of the animal

5 Finally, the corroding or digestive action of the several solutions on the abdominal wall was noted

After the preceding necessary preliminary experiments had been carried out the whole series of observations could be combined simultaneously in a long series of beakers, each containing one or more tadpoles immersed in increasing dilutions of the substance or substances The accompanying tables give the results of such series of experiments

TABLE I —*Dakin's Solution (Diluted to give the Concentration of Hypochlorite shown in Column 1)*

Dilution of hypo chlorite	Average time required to cause death	Condition of skin of tail at death	Minimum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 : 1 000	3 min	Sterile	3 min	35 min
1 : 2,000	6		3 "	3 hrs
1 : 4 000	12 "		6	4
1 10,000	18 "	"	5 "	44 "
1 25 000	30 "	"	10 "	Action absent
1 50 000	35	"	16 "	
1 100 000	60		30 "	"
1 : 500 000	Alive after 24 hrs	Sterile after 4 hrs	—	
1 : 1 000 000	"	Not sterile after 24 hrs	—	"

TABLE II —*Eusol (Diluted)*

Dilution of hypo-chlorite	Average time required to cause death	Condition of skin of tail at death	Maximum time required to sterilise skin of tail	Time required for abdominal wall to rupture.
1 : 2 000	5 min	Sterile	2 min	5 hours
1 : 4 000	6 "		3 "	Action absent
1 10 000	8		4 "	"
1 : 25 000	16		5	
1 50 000	35		12	"
1 100 000	60		30	
1 500 000	Alive after 24 hrs		—	"
1 1 000 000		Not sterile after 24 hrs	—	"

TABLE III —*Chloramine*

Dilution of antiseptic	Time required to cause death	Condition of skin of tail at time of death	Minimum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 : 50	18 min	Sterile	3 min	No appreciable solvent action
1 : 100	25	"	6	
1 : 200	35		10	
1 : 400	45		15	
1 1 000	1¼ hrs	"	25 "	
1 : 2 000	2		30	
1 4 000	2¾	"	1½ hrs	
1 : 10 000	5¼		1¾	
1 : 100,000	Alive after 24 hrs	Not sterile.	Not sterilised	
1 : 500 000			"	
1 1 000 000	"		"	"

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[1] British Journal of Surgery April 1917

TABLE IV —*Flavine*

Dilution of antiseptic	Average time required to cause death	Condition of skin of tail at time of death.	Minimum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 : 1,000	1 hr	Sterile	¾ hr	-No solvent action
1 2,000	2 hrs	Not sterile	Not sterilised	
1 : 4 000	3 ,,	,,	,	,
1 8 000	8	,,	,	
1 : 16,000	16 ,,	,,	,	,
1 : 32 000	Alive after 24 hrs	Not sterile after 24 hrs	,,	
1 : 50 000	,,	,	,	

TABLE V —*Iodine*

Dilution of antiseptic	Average time required to cause death	Condition of skin of tail at death	Minimum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 : 10 000	5 min	Sterile	3 min	No solvent action
1 : 50,000	20 ,,	,,	20 ,,	
1 100 000	30 ,,	Not sterile at death	—	
1 250 000	1 hr 50 min	,	—	,
1 500 000	2½ hrs	,	—	
1 1,000 000	Alive after 24 hrs	,,	—	

TABLE VI —*Mercuric Chloride*

Dilution of antiseptic	Average time required to cause death	Condition of skin of tail at time of death	Maximum time required to sterilise skin of tail	Time required for abdominal wall to rupture
1 2,500	11 min	Sterile	4 min	No solvent action
1 5,000	13 ,		4 ,,	,
1 : 10 000	30 ,		15 ,,	,
1 : 100 000	1¼ hrs		45 ,,	
1 : 500 000	2¾ ,		2 hr	
1 : 1,000 000	4 ,,	,	More than 2 hrs	,
1 : 5 000 000	5 ,	Not sterile	—	

Results of Experiments

A comparison of the tables shows that Dakin's and Lorrain Smith's solutions (Tables I and II) are practically parallel both in their lethal effects and in their power to sterilise living tissue, the latter action taking place in, roughly, half the time required to produce death, but that the solutions differ in their power to digest dead tissue Although in the table eusol is shown as digesting the abdominal wall in five hours, it should be noted that the effect was in no way comparable to that obtained with the highest dilution of Dakin's solution having this action In higher concentrations of Dakin's solution the tadpole, after dying, was speedily reduced to a little heap of sand representing the intestinal contents but with eusol this result was not obtained

Chloramine (Table III), by comparison with Dakin's solution and eusol, is shown to be relatively less toxic to the animal and the minimum time required to sterilise the tail is a much smaller fraction of the time required to kill the animal, being roughly ¼ contrasted with a ½ for the former substances These three preparations have, therefore, the common property that lethal action and bactericidal effects exercised upon the surface can be separated

Flavine (Table IV), or to be quite correct the two samples examined, has not the same power to sterilise the skin of the tadpole's tail The figures given in the table were the best obtained in four series, sterilisation having been obtained only once at death by a dilution of 1 in 2000

Iodine (Table V) and mercury perchloride have only been tested for the purposes of control, because, so far as I am aware, the method employed has not before been applied to a comparison of antiseptic power For iodine it may be noted that it is efficient—a point of interest—because it is so extensively employed as an application to the skin of the wounded, as well as in other circumstances Mercury perchloride calls for no comment beyond a reference to the figures (Table VI) as ascertained. The only point of interest in the present connexion is that with these substances lethal action and bactericidal power coincide in the higher dilutions This is also the case for the strongest concentration of flavine, bactericidal power and lethal action not being separable

Limitation of Corroding Action

As the question of the corroding action of Dakin's solution on the walls of healthy vessels has been raised in connexion with secondary hæmorrhage, and is one of importance, a series of experiments have been made on this subject It is well to show how this deleterious action can probably be excluded by the present observations

The anterior abdominal wall of the tadpole is a delicate membrane formed mainly of two layers of cubical cells Normally the intestines do not show through the anterior abdominal wall, whether in the living or newly dead tadpole, but in the event of a corroding or digestive action, the wall thins and they soon begin to be visible Finally, rupture of the abdominal wall is indicated with great exactness by the intestines being set free and shooting out, somewhat like a watch spring released A tadpole having been killed by immersion in water in which a trace of chloroform had been shaken up, was put into a beaker of hypochlorite solution simultaneously with a live tadpole of the same size, and the time required for digestion of the abdominal wall noted in the two cases Results such as the following were obtained —

Dakin's Solution

Dilution of hypochlorite	Time for abdominal wall to rupture	
	Tadpole immersed when dead	Tadpole immersed when living
1 1000	30 minutes	40 minutes
1 2000	2¼ hours	3 hours
1 : 4000	3 hours 40 minutes	3 hours 55 minutes

In such an experiment the action of the solution on the abdominal wall while the circulation remains intact for some time is contrasted with its action on the same delicate and still living membrane after the services of the circulation have been impaired or entirely lost The differences between the time required for the abdominal wall to rupture in the living and the dead animal respectively are larger than the interval required to produce death, as shown in column 2 of Table I[2], and hence the vitality retained by the skin immediately after death of the animal offers resistance to the digesting action of the fluid Moreover, if living tadpoles be compared with those that have been kept in water for an hour after death, the difference is greatly increased, showing that the more vitality is impaired, the more readily the tissue is attacked, and probably that dead tissue is immediately attacked Therefore the activity of the circulation and the retention of local vitality place limitations on the corroding action of Dakin's solution, while on the other hand the absence of a circulation and reduced vitality promote this action

It would appear from the above table as if the local action of Dakin's solution was held in check by an efficient circulation either by providing protein containing fluid or by carrying off and rendering harmless the hypochlorites as they approach living tissues without entering into combination with them—i e, killing them It seems reasonable to infer from experiments with such a delicate membrane that equilibrium between the two processes is well established within an extremely narrow zone of tissue—in this case two layers of cubical epithelial cells—and is an expression of the limited extent to which Dakin's solution, owing to its great lability or chemical instability can penetrate or injure living tissue in the presence of an efficient circulation

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[2] Death occurred for 1 : 1000 in 3 and for 1 : 2000 in 6 minutes for 1 4000 in 12 minutes The differences are therefore 7 and 23 minutes respectively for the first two dilutions The approximation of the times for the living and the dead tadpoles shown in the above table is characteristic of all reactions taking place in the extremes of dilutions at which they occur a all and may be left out of the argument except in so far as the table shows on the whole that if action on living tissue does not commence during complete vitality still an impairment of vitality by the solution itself cannot be excluded and that the solvent action is probably being attempted all the time and becomes efficacious immediately whenever the impairment short of death becomes sufficient. Further observations are in progress on the action of the hypochlorites on the web of the frog's foot both when the circulation is active and arrested

This lability has been urged as a disadvantage and certainly the necessity for repeatedly renewing the supply of the solution is a practical inconvenience, but the very lability of the hypochlorites is probably the essence of their efficacy in wound treatment as contrasted with antiseptics of known stability, and it still remains to be proved that the application of hypochlorites through other than watery media is equally efficacious, as in their application by means of the oily media now undergoing trial and which it is hoped may act as reservoirs parting slowly with the active ingredient and therefore not requiring frequent renewal

The other substances as tested are devoid of this solvent action on dead tissue which, unless of the highly delicate and easily balanced nature characteristic of Dakin's solution may readily be dangerous as in the case of the ferments The abdominal wall of a living mouse is rapidly digested by 1 c.c of a 1 per cent suspension of Fairchild trypsin, so that the intestines lie free from the cavity in a quarter of an hour whereas 30 times this quantity of trypsin is borne without any evident effect when injected intravenously

Secondary Hæmorrhage

I have heard different opinions expressed as to the manner of action of Dakin's solution The foregoing observations seem to make it clear that in a septic wound it acts both as an antiseptic and as a cleansing agent or remover of dead tissue liable to serve as a nidus for micro-organisms The latter are caught as it were, between two fires, the antiseptic action of the hypochlorites on the one hand, and the natural defences of the living tissues with which they are brought in direct contact on the other It may of course, be a disadvantage to remove, say all healthy fibrinous exudate from the surface of the wound, but this is more than counterbalanced by the removal of all dead tissue The removal of dead tissue is extremely well exhibited in a case brought to my notice by Captain F L A. Greaves R.A.M C The anastomotica magna had been ligatured in an open wound and the visible free end, under the action of Dakin's solution began to show signs of disappearing so that the occurrence of secondary hæmorrhage was feared Nothing of the kind happened, however the erosion stopping just before the point of ligature was reached

Were the erosion of sound vessels the usual cause of secondary hæmorrhage this accident would occur in practically all cases The evidence adduced above to the effect that erosion of the delicate epithelial membrane covering the abdomen of the tadpole is resisted by its local vitality may legitimately be taken as evidence that the same holds for man in view of the experience gained in the treatment of wounds Part of the frequency of secondary hæmorrhage may be due not to the action of the solution but only to its improper application say by pressure of the point of the Carrel's installation tube badly applied and thus leading to injury Where however secondary hæmorrhages are common or gross or obvious septic thrombosis can be excluded the accident should be regarded rather as an indication that the surgeon to-day can preserve wounded limbs damaged to such a degree that earlier in the war either the wounded man died or the limb was amputated. Even the most careful cleansing now habitually carried out may fail to detect small injured or infected vessels with or without thrombosis from which the bleeding apparently almost always arises The position in regard to secondary hæmorrhage appears to me to be very similar to that attending the occurrence of local tetanus or the more familiar post-diphtheritic paralysis Both the latter accidents are met with as a result of successful attempts in saving life

During the war much has had to be learned as to dressing or treating septic wounds as contrasted with those of intentional surgery, and although the goal has not yet been reached great progress has been made so far as one who is not a surgeon, although constantly observing wounds at a general hospital and a surgical observation hut can judge

Victor Hugo writing of events supposed to have taken place in 1832, tells us 'The dressings were complicated and difficult and it was not without difficulty that chloruretted lotions reached the end of the gangrene (Les Misérables), and perhaps had the beneficial eras of antiseptic and aseptic surgery not for the time banished such wounds as Victor Hugo alludes to we should have been better prepared for the proper application of the hypochlorites or have already obtained improvements on them

(Continued at foot of next column)

(Continued from preceding column.)

It would have been impossible for me to perform the numerous simple but tedious experiments of which examples are given without the able assistance of Private T C Reynolds R.A.M C In conclusion I have to thank Colonel H E Cree, A M S for granting me facilities for carrying out this investigation

THE RETRACTION OF BLOOD-CLOTS,

WITH TWO METHODS FOR SECURING A LARGE YIELD OF SERUM

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I THE EXTERNAL FACTORS

IN spite of the large amount of work that has been directed to the study of the coagulation of the blood, comparatively little attention has been attracted to what is in reality a part of the process—namely, the retraction of the clot by which the serum is squeezed out The question is of much theoretical interest, and now that so much use is made of serum in diagnosis and treatment, of some practical importance. In this and a subsequent article I propose to discuss the theory of the process, and to describe two methods by which a very full crop of serum may easily be obtained

The Process of Retraction of the Clot

The main phenomena are well known

Blood when drawn from the living body, and collected in a non living vessel, clots after a longer or shorter time At first the clot is a uniform, soft, mass After a period which varies from a few minutes to several hours, it usually begins to contract and in doing so squeezes out from itself a larger or smaller amount of serum, mixed, in most cases, with red corpuscles and leucocytes This serum usually makes its appearance in two situations—between the clot and the sides of the vessel, and on the surface of the clot—where at first a few small drops of serum appear, which, by their coalescence, form ultimately one or more large drops, or a complete layer of fluid The clot is heavier than the serum, and tends to sink, so that when the process is completed it forms a dark purplish mass, having approximately the shape of the containing vessel lying at the bottom of a greater or smaller amount of serum

When clotting takes place a fine network of filaments of fibrin is formed enclosing within its meshes serum red corpuscles and leucocytes This is the first stage of the process or coagulation In the second stage or retraction each filament tends to contract, and when it can do so successfully the serum and some of the red corpuscles are squeezed out, and a firm mass of fibrin containing a comparatively small number of red corpuscles is left The leucocytes I may add, almost certainly make their way through the clot by their own active movements the serum and red corpuscles are of course, squeezed out mechanically.

A little consideration will show that the effects of this contraction of the fibrin filaments will differ fundamentally in the centre and at the periphery of the clot If we consider a point in the centre of the clot (say a red corpuscle surrounded by a network of fibrin) we shall see that it is exposed to equal and opposite tensions in all directions and as a result there is a general raising of the pressure in the mass but no tendency for the movement of the serum or of the corpuscles in any one direction rather than in another, just as a sponge lying at the bottom of the ocean and permeated with water under high pressure will be neither compressed nor expanded Retraction therefore must commence at the periphery—either at the sides of the vessel or at the surface of the clot Here the conditions are quite different Consider the case of a point lying in contact with the wall of the vessel It also will be pulled on by fibrin filaments but not in all directions Those filaments which lie parallel to the surface in their contraction will have exactly the same effect as would be exerted by a stretched membrane surrounding the clot tending to compress it and make it smaller Those which are not parallel to the surface are either vertical thereto in which case they tend to pull the clot away from the containing vessel or at an angle, in which case they can be divided into their horizontal and vertical components one tending to make the clot contract the other pulling it away from the glass At first these tensions are balanced by the adhesion of the clot to the wall of the vessel, and if this is sufficiently firm retraction will never take place , if not, the clot first detaches itself from the surface, and then continues to contract At the upper surface there is no such counterbalancing pull, so that it is more easy for contraction to take place , hence we see, as a rule that serum appears first on the free surface, especially in large clots As a rule, however, not much fluid appears in this situation It is noteworthy, also, that there is usually a decided difference between the serum which appears on the top and at the sides of the clot, that in the former situation being turbid from red corpuscles, that in the latter being quite clear The reason for this difference is obvious When the blood is drawn the corpuscles immediately begin to settle and by the time clotting has taken place (unless this is very unusually rapid or unless the corpuscles sink with unusual slowness) there is a layer of corpuscle free plasma on the surface, and when this clots it interposes a barrier which allows the escape of serum, but not of corpuscles

Under certain circumstances (rapid settling of the corpuscles or slow coagulation of the blood) a thick layer of plasma may be formed before coagulation occurs In this case the clot that forms may be so firm that not even serum is squeezed out But here, I think, other factors may come in

A similar process takes place in the walls of the lower part of the clot as retraction proceeds The fluid that is squeezed out at the beginning of the process contains very many corpuscles, but as it continues these become less and less numerous, until at last only pure serum escapes This is obvious on careful examination, and I have corroborated it by actual count Here it is easy to see that the corpuscles which have been entangled near the surface will escape very easily, and in doing so leave a relatively firm mesh impassable to corpuscles, though permeable to serum After a time all the corpuscles which have passages open to them will have escaped and the sides of the clot will become to all intents and purposes similar to the non corpuscular layer at the top of the clot That this is the case may be shown by cutting a section of a clot in which complete retraction has taken place

Consideration of External Factors

I will now consider the factors which cause a difference in the retraction of different clots—why some retract quickly and give an abundant crop of serum, and some do so slowly, giving a smaller crop, or fail to retract at all

Two sets of factors have to be considered The first which I shall call the internal factors, are those which differ in different specimens of blood The second, the external factors, which I shall consider are the size and shape of the containing vessel, the nature of its walls, temperature, and gravity These are the main factors which we can alter more or less at our disposal, and in doing so cause great alterations in the process This paper deals with these external causes alone

(1) *The Shape and Size of the Vessel*

Reverting to our idea that the contraction takes place at the surface of the clot, which behaves as if it were enclosed in a slightly stretched elastic membrane theory shows what experiment clearly proves, that these factors are of prime importance This has not, I think been previously recognised In dealing with ordinary surface tension such as is always present at the surface of a liquid, it is a well known law, based on simple mathematical considerations that in the case of curved surfaces the smaller the sphere of which they form part the greater the tension the tension per unit being constant Thus if two soap bubbles of different size are connected the one with the other by means of an open tube the smaller will continue to contract (blowing out the larger one as it does so) until it forms a flat diaphragm across the tube

The force tending to draw the clot away from the surface is largest in small tubes and gets progressively less in larger tubes, reaching its minimum in a vessel with flat walls, in which the retraction commences and is most marked at the angles

In these experiments I have used human blood drawn directly from the veins This has been collected in a tube lined with paraffin, in which it will keep unclotted for a sufficiently long time for the experiments to be made Measurements, where necessary, are made with paraffined pipettes The following may be quoted as a proof of the effect of the size of the tube on the process The same specimen of blood was divided into eight tubes, two capillaries having an internal diameter of a little more than 1 millimetre, two narrow tubes having an internal diameter of about 4 mm , two "Wassermann" tubes with an internal diameter of 9 mm , and two test-tubes of 17 mm The results were as follows —

Diam of tube	½ hour	1 hour	2 hours	4 hours	24 hours	Yield of serum
17 mm	No retraction	No retraction a little serum on the top	No change	No change	No change.	0% except for a little at the top.
	,	,,				
9 mm	No retraction	No retraction	No retraction a little serum on the top	Slight retraction	Marked retraction	21·5%
		,		Nil	Slight retraction	6 3%
4 mm	No retraction	Retraction just obvious	Much	Much	Much	30 7%
,		No retraction			,	29·2%
Capillary rather more than 1 mm	Abundant retraction	Abundant retraction	No obvious alteration	No obvious alteration	No obvious alteration	56·0%
,		–			,	59·6%

Room temperature throughout

As a result of a considerable number of observations I can make the following statements with regard to specimens kept at the room temperature 1 Blood collected in capillary tubes always contracts completely, yielding the full theoretical amount of serum In most cases it commences in less than 15 minutes and is complete, or nearly so in another 15 2 In the tubes such as I use for Wright's collecting capsules, which have an internal diameter of 3-4 mm , retraction almost always takes place and is usually complete, or nearly so, but it is occasionally only partial and is always decidedly slower than in capillaries 3 In Wassermann tubes retraction is the rule, but there are occasional exceptions It is much slower and not as a rule complete in less than 12-24 hours 4 In large test-tubes it is very frequently absent and is always slow and often incomplete

The practical application of this is that where a good crop of serum is required the blood should always be collected in tubes as small as is convenient

(2) *Influence of the Nature of the Walls of the Vessel*

If this is of such a nature that the fibrin filaments can attach themselves firmly thereto, much of the force of their contraction (which I believe can only act for a limited time) may be expended in tearing the clot from the wall with the result that but little serum will be squeezed out In dealing with glass vessels of ordinary cleanliness I do not find this is a factor of any great importance and I have never yet found any medium which is sufficient to prevent the retraction of the clot from the walls of small tubes provided the proper temperature is employed In general the cleaner and newer the vessel the easier and quicker is the retraction , it takes place best of all in tubes that have recently been drawn out and in a tube that has been dry sterilised whilst not quite clean it may be appreciably delayed

In the course of a search for some material from which the clot would not detach itself at all I have had the best results with paraffin A tube lined with hard paraffin and allowed to set will often show no trace of serum long after complete separation has occurred in an ordinary tube I shall show subsequently how this fact is used in procuring a large and quick yield of serum

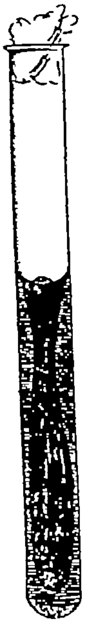
I do not think a clot formed in a living vein retracts from the walls I have never seen any unmistakable indication of this in sections of thrombosed veins and have not found it to occur in some observations I made in vessels in amputated limbs When separation of the clot, with resultant embolism takes place, I believe it is always due to a partial liquefaction of the clot by the trypsin given off by the polynuclear leucocytes—or of course, it may be separated by violence

(3) *Effect of Gravity*

If a freshly formed clot be suspended in air, the process of expression is very rapid the contraction of the fibrin being assisted by the weight of the serum, which tends to run out, just as water would do from a suspended sponge But if the clot remains in the serum this assistance from gravity is very much less, and at first sight it may not be apparent how it is brought about at all, for the serum within and that outside the clot have, of course, exactly the same specific gravity, and that within will have no tendency whatever to drain away

Two cases may be considered In the first, which usually occurs in comparatively narrow test-tubes, the clot remains adherent by a "rim of attachment" at its upper angle of contact with the wall of the tube, retraction always begins at some point on the side, and extends until every point except this rim of attachment has detached itself from the glass If we study such a clot (Fig 1) we shall see that it has a wide top, a comparatively narrow neck, and a wider base which is often almost or quite as wide as the tube, and may in some cases be almost spherical The shape is due to the action of gravity on a soft mass, originally cylindrical, which is lifting itself up by the contraction of its surface membrane The narrow neck is, of course, due to the stretching by the weight below whilst the rounded shape of the base is due to the fact that all stretched membranes tend to assume a spherical form

FIG 1



It surprises many to whom this phenomenon is first pointed out to realise that the very delicate rim of attachment should support the whole weight of the clot, but a little consideration will show that this is not really remarkable When the clot is first formed it has, of course, the specific gravity of the whole blood (about 1056) As soon as retraction commences it begins to rise, some of the serum, which is lighter (sp gr 1030), escapes At first the pull on the rim of attachment is practically nil As the clot shrinks its specific gravity gradually rises, ultimately reaching something just under 1100 At this point it will only weigh, whilst in the serum as much as if it has a specific gravity of 1100 – 1030, or 70 The force of gravity which helps to squeeze out the serum is never more than would be exerted on a cylinder of this specific gravity, suspended in air It does help the process somewhat, as is shown by the narrow neck of the clot from which the serum must be pretty thoroughly expressed The slight weight of the clot whilst suspended in serum may be understood when we realise that the contraction of the fibrin filaments will be quite sufficient to lift a large clot bodily from the bottom of the tube

If we cautiously insert a narrow pipette doing as little harm to the rim of attachment as possible, and pipette off the serum, the clot will regain its full weight so that the upper part will be forcibly stretched, and there will in addition, be the direct action of gravity on the serum in the clot The most efficient method by which we can assure gravity is by pipetting or drawing off the serum as fast as it is formed

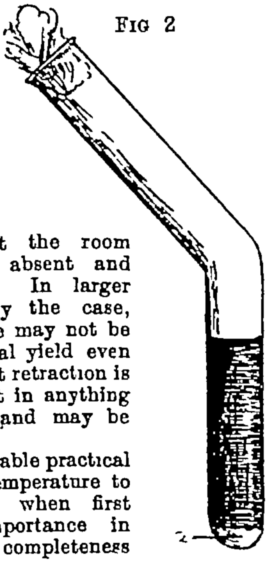
In the second case, which usually occurs in large vessels, the rim of attachment will not hold and the clot sinks to the bottom This is because the length of the rim increases only proportionately to the diameter of the vessel whereas the weight of the clot rises in proportion to its cube Here gravity helps in that the upper part of the clot presses on the lower, and tends to press out the serum, but the conditions are much less favourable for, firstly, the clot may be pressed against the walls of the vessels and the serum be thus prevented mechanically from escaping, and secondly, the compressing force exerted by the upper part of the clot tends to counteract the contraction of the lower part Of course if the clot does not separate itself from the walls of the vessel at all it may be necessary to separate it mechanically by means of a sterile wire, but where it can be avoided it is best not to do so, it is much better to leave the clot attached at the upper rim as long as possible and to pipette the serum off as soon as it appears

(4) *Effect of Temperature*

This is of the highest importance, and in general terms it may be stated that the nearer the temperature of the vessel to that of the body the quicker and more complete will be the retraction I have stated that every specimen of blood that I have ever seen has retracted at room temperature when kept in tubes about 3-4 mm in diameter, though the retraction is not always complete and is usually slow Retraction at incubator temperature is always rapid and complete In tubes about 1 cm in diameter retraction always takes place in the incubator, and is usually complete, at the room temperature it is sometimes absent and usually slow and incomplete In larger tubes this is very frequently the case, and even in the incubator there may not be anything like the full theoretical yield even after 12 hours In the ice chest retraction is usually absent or but very slight in anything larger than a capillary tube, and may be incomplete in these

Another point of very considerable practical importance is this it is the temperature to which the blood is exposed when first drawn that is of chief importance in determining the rate and completeness of the retraction, and in some cases the effect of exposure to an unsuitable temperature at this period cannot be afterwards undone

FIG 2



In Figs 2, 3 4 and 5 *a* represents the paraffined surface

One or two examples must be quoted —

(1) A specimen of blood in a paraffined tube was divided into two Wassermann tubes One was placed at once in ice water, kept there for half an hour, and subsequently kept at the room temperature It showed no retraction in 1¼ hours, and next day the percentage of serum present was 13 In the control tube, which was kept at room temperature throughout retraction was well marked in a quarter of an hour and in 48 hours the crop of serum was 34 6 per cent

(2) In a similar experiment four tubes were used, two of which were incubated 1 hour and then kept at the room temperature These gave 56 6 per cent and 50 per cent of serum (The blood was from a slightly anæmic person) Two other tubes were kept at the room temperature through out They gave 41 6 per cent and 34 6 per cent respectively

(3) In this experiment two Wassermann tubes of blood were incubated from the first, two kept at room temperature for 1 hour, then incubated, and two kept on ice for 1 hour, and then also incubated The following table shows the rapidity and completeness of the retraction —

—	½ hour *	1 hour	2 hours	Yield of serum after 3 hours
Incubated from the first	Retraction nearly complete	Apparently complete.	No change	53 3 % 56 6 %
Room temperature 1 hour then incubated	No retraction	No retraction	Much retraction	51 7 % 51·7 %
Ice-water 1 hour then incubated	No retraction	No retraction	No retraction Marked retraction	10 0 % 18 1 %

* Not counting the first hour

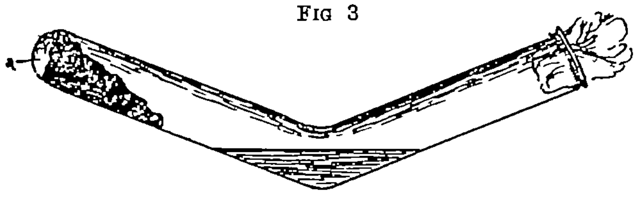
Hence when we wish to collect as much serum as possible we ought to collect our blood in warmed tubes and incubate it as soon as possible After an hour or two it may be kept at the room temperature if desired but the ice chest should be avoided until complete retraction has taken place I should add that this fact was first pointed out to me by Dr Cartwright Wood

I will conclude by giving two methods by which a very full crop of serum can be obtained in a very simple manner, and one which does away with any chance of contamination or the addition of foreign substances They are based on the power that a clot has of adhering with some tenacity to a paraffined surface

Description of Methods

1 Bend a test-tube (as long as possible) about the middle to an angle of 135° or thereabouts After sterilising it pour in a small amount of melted paraffin, heat it, and keep the tube upright until it is cold When set the paraffin will form a layer at the bottom of the tube , it is an advantage to let it run along the side of the tube away from which the upper limb is turned (that which is lower when the tube is placed on its side, as in Fig 3) A tube thus prepared will, of course, keep indefinitely To use it, fill with blood short of the angle and keep it upright until coagulation has taken place—of course in the incubator (Fig 2) Then put it down on its side, slightly tilted so that the serum may drain down into the angle With a tube of the ordinary test-tube diameter and containing 8–10 c c of blood retraction will usually be complete in two hours or less, and it will be seen that the clot has stuck to the paraffined surface of the tube, whilst it has retracted elsewhere, and has allowed the serum to collect in the angle of the tube (Fig 3)

FIG 3



Workers may like to compare this method with that described by Dr Gardner in THE LANCET of July 14th Beside the advantage that the tubes can be kept ready for use, I find it more efficient Thus in one experiment in which a sample of blood was divided between one of my tubes and one of Dr Gardner's, and the crop of serum examined after two hours' incubation, I got the following results —

In the paraffined tube Total volume of blood, 7 7 c c Volume of serum, 3 3 c c Amount, 42 9 per cent

In the agar tube Total volume of blood, 12 6 c c Amount of serum, 3 1 c c , or 23 8 per cent

The experiment was a little unfair in that the paraffined tube contained rather less blood so that a relatively larger crop might have been expected Retraction in the agar tube is, as Dr Gardner states, decidedly better than in ordinary tubes

FIG 4

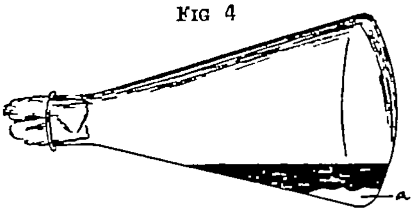
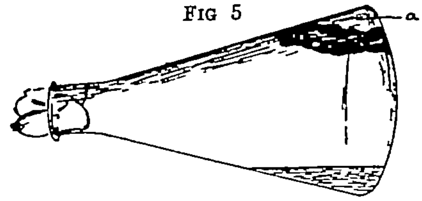


FIG 5



2 In case the angled tube is objected to, and only ordinary laboratory apparatus preferred, I have modified the method by paraffining the side of a flask The blood is allowed to clot in contact with this surface, the flask being kept on its side the paraffined surface should not be so large that the blood does not touch the glass or coagulation will be unduly delayed When this is complete, turn the flask round so that the blood is uppermost The serum will be very rapidly expressed and form a pool on the opposite side of the flask In one experiment the blood took one hour to clot and gave 42 8 per cent. in another half hour (Figs 4 and 5)

I have to thank Mr H T Rymer for his kindness in drawing me the illustrations which accompany this article

GASTRIC ATONY AND WAR NEURASTHENIA

BY J CAMPBELL McCLURE, M D GLASG ,
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I SHOULD like to begin this short paper by an extract from Cannon s article on the Nature of Gastric Peristalsis [1]

> ' Tonus as an essential factor of gastric peristalsis is first given by vagus impulses and later maintained by the stomach itself—for (1) severing the vagi before feeding results in inactivity (2) severing the vagi after digestion is started causes no change in gastric movements or in the rate of discharge Probably a psychic tonus is developed by the taking of food The method of maintaining the tonic state locally as digestion proceeds and of increasing it as the stomach empties is not yet determined It may be the result of a ' contraction remainder after each rhythmic pulsation
>
> The above results account for the functions of the vagi and the splanchnics They are nerves which increase or decrease the tonus of gastric musculature and thereby affect peristalsis The absence of stomach movements for example in states of exhaustion can be explained by the failure of vagus impulses and in emotional states by the presence of splanchnic impulses Both conditions result in absence of gastric tonus '

It seems to me that this physiological observation may throw some light on a condition which is at present a source of considerable trouble to those who are dealing with war neurasthenics

Description of Condition

I have seen in the past two years a large number of soldiers suffering from neurasthenia, either with or without a definite history of shell shock, who, in addition to the physical exhaustion and psychasthenia common in these cases, have suffered definitely from sensations referable to the abdomen, such as aching in the left hypochondrium, pain in the epigastrium, a sensation of constriction in the lower sternal region, and a general feeling of sinking referred not only to the epigastrium but perhaps to the whole abdomen Many of these show disordered cardiac action, particularly in the direction of intermittent tachycardia, extrasystoles, or persistent rapid action The systolic blood pressure is usually low, between 110 and 120 Many of them have suffered also from slight but definite pain in the right hypochondrium and right and left iliac regions They are for the most part listless suffer from loss of appetite, and complain of a feeling of distension after eating which persists for some hours, and indeed may not pass off before the time for the next meal Most of them are constipated, and some suffer from alternate constipation and diarrhœa

All these men have been subjected, apart from definite shell shock to experiences which are exhausting physically and mentally trying Vigilance, anxiety responsibility and lack of sleep, together with *exposure to noise* have all contributed to produce a condition of physical and mental exhaustion combined with severe emotional disturbance One has to remember in dealing with such patients at the present time that in the case of the bravest man the emotion of fear, or if we choose to call it so, of anxiety, is a contributing factor in the production of any condition of muscular and nervous weakness

The progress of such cases is in most instances unsatisfactory They improve after rest in hospital up to a point—that is to say, they get stronger, sleep better lose their fears and are able to take an interest in their surroundings and in the general topics of the day They may even be able to take up serious reading with interest But the abdominal symptoms remain although pain may disappear uneasiness may persist either in the epigastrium or in the right or left hypochondrium and under excitement or worry the feeling of sinking in the abdomen and the general muscular feebleness are apt to recur

In the vast majority of such cases, in my experience, auscultatory percussion of the stomach reveals the fact that the upper border of clear percussion is unusually high associated in many cases, but not invariably with some spreading to the left of tympanitic percussion An X ray examination after an opaque meal shows a high air bubble and a stomach slightly more capacious than normally and rather slow to empty There may or may not be an undue amount of ileo colic stasis

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[1] Cannon The Nature of Gastric Peristalsis Am Journ of Physiology 1911-12 xxix p 264 &c.

Treatment

This condition of gastro-intestinal atony may persist for a long time and is irksome to the patient and physician alike It does not disappear even after a prolonged rest and careful dieting or, if it does so, is apt to recur as soon as the patient begins to get about It is not influenced very greatly by rigid dieting, indeed a patient seems to do better on an ordinary sensible, mixed fresh food diet, so long as the food given does not contain too much indigestible residue, than when he is confined to a diet that is fluid or semi fluid In fact, in most cases the patient has a very fair idea of what he can eat and what he ought to avoid, but, of course, alcohol and the excessive use of tobacco must be forbidden. In respect of this point there is one caution that must be insisted upon, and that is that in those cases where the abdominal discomfort and pain is practically constant patients are apt, unless encouraged to eat, to avoid food almost entirely, and it has to be explained to them that any kind of food would give them the same amount of discomfort, and that they must eat if strength is to be maintained This is a difficulty which presents itself in dealing with any kind of gastric neurasthenic

Cannon s paper throws some light on the causation of their condition and also indicates along what lines treatment should proceed The experiences of a man, and especially of an officer, during this war are such as to produce just that condition of exhaustion of vagus centres and emotional disturbance which tend to produce atony of the stomach either from failure of vagus impulses or from an excess of splanchnic impulses, with a resulting loss of gastric tone The difference between the atony produced by emotional states through the splanchnics and that produced by the failure of vagus impulses on account of exhaustion of centres may be of some clinical importance both as regards prognosis and treatment It is often of considerable difficulty to determine with which class of case one is confronted, and in the absence of any definite laboratory test there remains only the test of the clinical progress of the patient It is my practice to keep all such cases in bed for a while after they have come under my observation, although they may have been in hospital for a considerable time previously, and treat them by the use of such general sedatives as bromide and belladonna direct stimulants such as hydrastis, which Major Black has used with good effect in this connexion,[2] and by the manipulative methods and proper spacing of meals as described by Mitchell,[3] Wethered,[4] and McClure [5] In a number of cases both the neurasthenic and abdominal conditions clear up rapidly under this combination of treatment, and I am inclined to believe that in these cases the gastric fault is largely due to an undue increase of splanchnic impulses, combined, perhaps with local lesions of the gastro-intestinal mucous membrane, the result of hurried or improper feeding There may be in such cases a certain amount of vagus failure but not to any serious extent Such patients do well, and are speedily advanced to convalescence and successfully returned to duty

The Two Classes of Cases

The majority of cases, however, do not recover quickly The gastric condition improves and relapses and although after many weeks of careful manipulative treatment or even general massage electrical treatment, and encouragement on the part of all in contact with him, the patient may leave the hospital feeling fairly well or even quite well he tends to relapse at once if he undertakes work involving any great degree of muscular or physical strain.

These are the main differences between the two classes of neurasthenia associated with gastric atony which I have met with in soldiers. In the former class, who recover quickly and apparently completely after suitable treatment, I believe that the gastric atony is due to over influence of splanchnics By the use of suitable sedatives and stimulation of the vagus trunk by manipulative treatment over the abdominal areas first described by Mitchell [3] and confirmed by Wethered [4] and McClure,[5] the proper balance between the vagus and splanchnic impulses to the stomach is restored and the organ recovers its tone rapidly and completely In the latter class wh se convalescence is long and too often incomplete, it appears likely that the nervous fault which produces the gastric atony is failure of impulses due to exhaustion of the vagus centres This belief seems to be confirmed by the results of manipulative treatment in such cases It appears to be likely that the stimulation of the skin areas over the abdomen induces increased tonus and peristalsis of the stomach through the vagus trunk, and the comparative failure of this line of treatment to produce either a rapid improvement or permanent cure in this latter group is only natural if the atony be due to exhaustion of vagus centres

Cases Due to Vagus Failure

Such cases are difficult to handle from the start Their muscular feebleness, combined with abdominal discomfort, makes them apprehensive and depressed From the psychological point of view it is no use telling them to buck up and help themselves to get well A physician in charge can best encourage his patient by explaining from the outset that the illness is likely to be fairly long, improvement must be gradual, and perhaps a little slow, but that the ultimate outlook is good It is not wise to keep these cases too long in hospital, as they absorb with great ease the hospital atmosphere and develop habits of invalidism The best way of treating them is to have them rested sufficiently long and treated by all the special methods suitable for their condition, such as manipulative treatment of the abdomen suitable baths and douches, and various kinds of electrical treatment, including the static It is necessary to caution those who have such patients under their care that the manipulative treatment of the stomach by the excitation of the cutaneo gastric reflex, while forming in my opinion an essential part of their treatment, must not be carried on too long at one sitting, as one is apt to tire the patient too much, simple and slight as the manipulation may appear to be

After the first definite improvement has taken place and the patient is able to go about, it is usually better in such cases to send him away from hospital for a time, so that he may live quietly in the country and take slight exercise well within his powers After this period of rest the patient may be brought back again to hospital or may be treated as an out patient, either in the consulting room or a clinic while living in some place other than a hospital, that is, in his own home or some small convalescent hospital where the medical atmosphere is not too obtrusive, and yet where he is still under control

After a period of out-patient treatment of this kind the patient should again be sent to the country, and the necessity for recalling him as an out-patient depends upon his capacity for taking exercise and developing some hobby

In addition to the forms of treatment mentioned many cases of this kind respond well to certain organo-therapeutic preparations Certain polyglandular extracts, extracts prepared from the duodenal mucous membrane, pituitary extract, and small doses of thyroid combined with didymin, have all been found useful in suitable cases I have come to the conclusion that proper organo-therapy is an essential part in the treatment of cases of vagus failure, and materially helps in the prevention of relapses

It is well to point out that in a bad breakdown of this type it is useless to expect anything like a reasonable convalescence for many months, and during the whole period of treatment the patient should, as far as possible, be spared any unnecessary worry or excitement I have known a case that was progressing favourably so upset by unskilful handling at his medical board that a serious relapse was induced. In this particular instance a most enthusiastic young soldier was practically charged with malingering, and the mental effect of this was disastrous It is well for people to realise that even in war time and in the case of a soldier a man may be very ill without presenting any very gross lesion on physical examination and may, indeed, as far as fitness for service goes, be in as bad a condition as the man who has a stiff joint as the result of a bullet wound. It is true that a skilful malingerer may simulate with some success a neurasthenic state, but no one need make the mistake of classing as a malingerer a man who suffers from neurasthenia associated with gastric atony, whether due to the over influence of splanchnics or the failure of vagus impulses A little care in the examination of the abdomen in the recumbent position will reveal an upper border of stomach that is abnormally high, and perhaps some spreading of the gastric area of clear percussion to the left, while an X ray examination in the upright position will show a very high air bubble, and as often as not a definite degree of gastric stasis with some dropping of the stomach

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[2] Proc Roy Soc Med January 1917 Section of Balneology and Climatology p 29

[3] THE LANCET Jan 28th 1911

[4] Practitioner December 1911

[5] THE LANCET Sept 25th 1915

It is very wise in cases of this kind not to subject the patient too often to examination by a medical board It is quite sufficient to examine them every three or even six months to begin with and the time for such an examination, also, should be definitely fixed and the appointment kept by the examiners I have known cases have a relapse while waiting anxiously for ten days or a fortnight before hearing that their medical board has been fixed These may be small matters, but the treatment of neurasthenics is successful only by scrupulous attention to small matters, and the physician in charge needs every possible assistance from all those in any way connected with the case, whether in or out of hospital

Harley-street, W

DIATHERMY,

FOR THE TREATMENT OF CERTAIN LOCAL ABNORMALITIES OF THE SKIN

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THERE appears to be among the general public quite a widespread impression that certain affections of the skin, which may be grouped under the title of "blemishes," are such as the medical profession does not deign to treat or considers of so little importance (perhaps merely a question of vanity) that they would not be inclined to give the attention which, in the opinion of the patient, the particular condition deserves It is true, also, that a large number of practitioners are not aware of the advance in electro therapeutics which permits of these 'blemishes" being removed with an efficiency and accuracy which were not possible a few years ago Small wonder, therefore that many such sufferers are attracted by the flaunted advertisements of miraculous cures, whether by local applications, medicines, or at the hands of some unqualified practitioners

In diathermy we possess a means of dealing with, and in most cases of effectually curing, many conditions of the skin which till recently had been treated in various other ways, often with only partial success

The conditions referred to are such abnormalities as the different forms of moles and warts, corns, stellate veins, telangiectases, capillary nævi, port-wine marks, xanthelasma, acne, keloid, adenomata, freckles, &c

The treatment formerly employed in these cases has usually come under one of the following heads 1 Local applications of a caustic, such as silver nitrate acetic acid, nitric acid, sulphuric acid, trichloracetic acid, &c 2 The actual cautery 3 Ionisation with chlorine, magnesium, zinc, &c , by means of pads soaked in solution of the appropriate salts and applied to the surface 4 Simple electrolysis 5 Transfixion with a zinc or copper needle and the passage of the electric current, thereby again employing the caustic ions of zinc or copper 6 Freezing by means of carbonic acid snow

Some of the advantages which the method shortly to be described presents over these methods are (*a*) The rapidity with which the treatment can be carried out (*b*) The absence of inflammatory reaction (*c*) The accuracy and limitation which can be secured to definite areas whether large or small and however irregular (*d*) The depth to which destruction of tissue is to be carried out can be gauged and regulated (*e*) Scarring is much reduced in area and less noticeable. (*f*) The treatment is comparatively painless Even children frequently tolerate it without a murmur

The Mode of Treatment

The apparatus necessary consists of one of the various patterns of diathermy apparatus (several very efficient ones are now on the market made by English firms) and a high frequency couch with handles The patient is placed on the couch with his hands grasping the handles, and the electrodes from the diathermy apparatus are fastened to the metallic plate at the back of the couch and to the handles respectively The current is then turned on to give a reading of from 0 25 amp to 0 50 ampere By this means the patient becomes part of a charged condenser, of which the cushion of the couch is the dielectric and he and the metallic plate at the back of the couch are the two conducting surfaces If, then, a metallic instrument be approximated to his skin a discharge of electric current takes place from the skin to the instrument in the form of a spark. For the purpose under consideration a pointed silver probe (uninsulated) answers the purpose very well, but for the sake of adjustment to individual cases it is convenient to have several probes with fine and blunt pointing An ebonite rod may be held in the left hand to place against the patient as a means of support for the operating hand If this is not done unpleasant sparking may occur through inadvertently touching the patient

The instrument is then brought at right-angles to the skin so that the point is almost in contact with the surface to be attacked, when fine sparking is observed to take place This is allowed to occur for a variable time, measured by seconds, according to the depth and area to be treated, when a yellowish white, depressed surface remains Little or no surrounding inflammation occurs and no dressing is required The destroyed area crumbles away in the course of a few days, leaving in the case of small moles no perceptible scar, and when larger surfaces have been treated a slightly depressed whitish, soft scar

As an instance of the quickness with which this treatment can be carried out, I not long ago removed 17 moles on the face in less than ten minutes

The powerful mental effect which, in the case of women particularly, so often accompanies a comparatively slight facial disfigurement is alone a justification of the importance of dealing effectively with many of these abnormalities

THE RELATION OF THE CASE OF CEREBRO-SPINAL FEVER TO THE POSITIVE CONTACTS

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ONE of the problems of practical importance in connexion with cerebro-spinal fever is the question whether the case has infected those of his contacts who are subsequently found to be positive, or whether the case has been infected by one of a collection of already positive contacts

There appear to be two fundamentally different views upon this subject According to the *first*, the case is essentially a carrier and is responsible for propagating the disease by spraying cocci from his throat The positive contacts have derived their infection from the case and may develop the disease According to the *second* view the case is not a carrier in the ordinary sense of the word, and is not specially responsible for propagating the disease The positive contacts, if any, have derived their infection from another carrier, and the case is infected by one or more of these contacts

The correct elucidation of this problem has a bearing upon cerebro-spinal fever administration in the Navy The first view would suggest that if, for instance a case is brought into a general ward before removal to an isolation hospital, not only the original messmates of the case should be swabbed, but also the patients in the ward, *to see if the case has infected anyone* On the other hand, the second view would not entail the swabbing of the ward, because the object in view is to *find the carrier who infected the case*

There appears to be no direct method by which this question may be settled, however excellent are the facilities for tracing infection The positive contacts are only discovered upon the occurrence of a case, and then it cannot be deduced which individual acquired the coccus first Indirectly however, important evidence is forthcoming According to the first view, the case must be a carrier before the onset of the disease Further if the case is a carrier it must be common for carriers to develop cerebro spinal fever

Our results obtained from a very large material indicate that neither of these consequences is correct

1 *The presence of meningococci in the throats of cases before the onset of the disease* —Owing to certain regulations which exist in the Navy it has been possible for us to examine the throats of a number of men who subsequently developed cerebro-spinal fever On the outbreak of symptoms these men were treated in Haslar Hospital and were then repeatedly examined by us In the following table the interval of time between the first swab and the onset of symptoms is indicated —

Case No	Date of swab before onset	Result	Date of onset.	Days interval
437	Dec 1st 1916	Neg	Feb 4th 1917	65
182	15th		Jan 3rd	19
705	22nd		March 7th	75
343	23rd		Jan. 13th	21
357	29th		22nd	24
206	31st		4th	4
344	31st		20th	20
414	Jan 8th 1917		31st	23
469	26th		Feb 8th	10
468	31st		8th	8
568	Feb 1st		19th	18
704	3rd		March 6th	31
536	10th		Feb 15th	5
567	11th		19th	8
565	11th		19th	8
868	15th		April 11th	70
633	18th		Feb 22nd	4
696	22nd		March 5th	11
790	25th		7th	10
737	25th		10th	13
809	27th		21st	22
687	March 2nd		4th	2
841	6th April 4th and 10th		April 18th	43 14 and 8
706	March 8th		March 12th	4
845	13th and 16th		April 2nd	20 and 17
1028	18th		May 27th	70

It will be observed that in every one of the 26 cases the swab taken before the onset was negative One of the cases was examined three times and another twice The swabs were taken at varying times before the onset, some of them very shortly before—namely, one 2 days and three 4 days

It would, therefore appear that cases of cerebro spinal fever are not carriers before the onset of symptoms, or, allowing for an experimental error which cannot be high, cases can seldom be carriers before the onset

2 *The occurrence of cerebro spinal fever among carriers* —It has been stated by Colonel M H Gordon 'that every case of cerebro spinal fever is an instance of a carrier developing the disease ' In the last section however, it will be seen that this statement requires modification In endeavouring to establish the occurrence of the disease among carriers it is necessary to confine the inquiry to men who have actually been proved to be carriers before the onset of the supposed disease Captain M Flack in his report upon the outbreak in London [1] refers to four such cases as occurring among his 185 carriers From the account given, however, it cannot be said to be certain that all of these men were instances of this phenomenon We have had a considerably larger number of carriers under observation—namely, 485, all were interned in one camp, and all were proved to be carriers of epidemic types of meningococci None of these men developed cerebro-spinal fever and therefore we may conclude that a carrier very rarely develops the disease

Since therefore both foundations for maintaining to the contrary are found to be wrong we conclude that the case of cerebro-spinal fever is not specially responsible for the spread of the disease and is infected by one of the positive contacts

We look upon the case as one of the rare individuals who cannot confine the meningococci to the naso-pharynx and merely "carry Our results also appear to indicate that in such a case the cocci pass very rapidly to the central nervous system after gaining access to the naso-pharynx

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[1] Medical Research Committee Special Report Series No 3 p 59

Dr Fritz de Quervain, professor of surgery in the University of Basle has succeeded to the chair of surgery at Berne left vacant by the death of Professor Kocher —Dr W R Hess has been appointed professor of physiology in the University of Zürich and director of the Physiological Institute —Professor Jaillens has been chosen as successor to the late Professor Combe in the chair of pædiatrics at Lausanne University

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CARDIAC DIGITAL PERCUSSION

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AND
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[*Prefatory Note by* Dr GORDON —My colleague, Mr Bell, has been so good as to associate himself with me in this paper I cannot over emphasise the importance of his support Mr Bell is well known to be one of the finest violinists in the West of England, and the accuracy of his ear is unquestionable For my own ear I can make no such claim, but in the technique of digital percussion even an indifferent pianist possesses some advantage]

Consideration of Three Points

We desire to direct attention to the following three points (1) That the "superficial" as distinguished from the "deep" cardiac dullness is at present practically unimportant, (2) that the difference, generally described, between the results of "light" and "heavy" percussion in defining the cardiac dullness is, usually if not always, due to faulty methods of percussion, and (3) that the general failure to recognise the striking changes usually produced in the digital cardiac dullness by change of posture from erect to recumbent, is due to faulty methods of percussion, and is responsible for errors in diagnosis and prognosis which go far to interfere with the progress of cardiology

1 "*Superficial" and deep" cardiac dullness* —We know of no authority on cardiac physical signs who does not lay stress on the distinction between "superficial" and "deep" cardiac dullness But neither do we know of any who gives an adequate reason for doing so For at present no practical use is made of the ' superficial" dullness A little reflection will make that evident Some day some important use may be found for the "superficial" dullness, but at present it only serves to confuse the student, distracting his attention from the "deep" dullness which, with existing knowledge alone really matters We feel justified therefore, in what follows, in ignoring the unimportant "superficial" dullness and in speaking of the "deep" cardiac dullness simply as ' the cardiac dullness "

2 "*Light" and ' heavy" percussion* —It is commonly said that 'light" and 'heavy" percussion give constantly quite different results in delimiting the cardiac dullness Our experience is not in accordance with this On the contrary we find that, if a clear note be elicited, "light" and "heavy' percussion yield practically identical results Obviously either we or those who find differently from us must be defective in hearing or in methods of percussion As we are approaching the subject with a specially trained ear we do not admit any defect of hearing on our part With methods of percussion we shall deal immediately

3 *Posture and cardiac dullness* —The failure of the profession generally to recognise the change in the cardiac dullness, which is usually produced by change of posture from the erect to the recumbent, is remarkable But there can be no doubt of this failure For when the change so caused in the normal dullness was pointed out in 1905 at a meeting of the Royal Medical and Chirurgical Society, it was a new fact and had to be verified [1], in 1910 when attention was again drawn to it, and especially to the change in the rightward edge of the dullness, both in health and disease [2] the correctness of the observations was at once called in question, and at the present time cardiac cases are continually being recorded with no statement added of the posture in which percussional measurements are made

Text-book medical literature is silent on the subject Obviously, therefore, either our method of percussion or that in general use must be defective The question is "Which?" We naturally think that our own frequently repeated observations are correct yet, if they are unverifiable by others, the presumption would be strong that some fallacy underlay them They have however, been repeatedly so verified Further they have yielded useful results which appear undiscoverable by the methods in fashion Thus we have found almost constant differences in dullness in differing positions whose recognition enables us to watch week by week with no fear of fallacy the progress of cardiac cases under our treatment, where they are not present evident reasons have been found to explain their absence, and the remarkable diminution in the recumbent dullness in cases of cancer[3] has placed within our reach a new aid in diagnosis All these facts have been already sufficiently enlarged on and illustrated in former papers[4] We have therefore been emboldened to ask ourselves whether the methods in common use are superior to our own and to arrive at the very definite conclusion that they are not. In fact we believe that we are enunciating a very important truth in asserting that the methods of digital percussion now in general use are faulty and misleading

Comparison of Methods

But, in making this assertion, we have first to define exactly what we mean by digital percussion Of recent years, the modifications which, naturally enough, have arisen in percussional methods have rather tended to confuse the subject Obviously we are not dealing with results obtained with pleximeters, equally obviously not with so-called "auscultatory percussion." Nor with so called "palpatory percussion," which concerns itself, either wholly or in part, with the sense of differing resistance Our remarks relate solely to the production of sounds by the percussion of finger on finger, at present incomparably the most important form of percussion, because incomparably the commonest We would recall in passing the admitted fact that the results obtained by it in competent hands coincide remarkably with anatomical findings

There is nothing new in our method, which differs in no material particular from that which is theoretically approved in text-books It is this Moving the right hand loosely from the wrist-joint, we strike with its middle finger, bent, as in piano playing, to deliver the blow perpendicularly, upon the middle phalanx of the middle finger of the left hand, laid flat, evenly and rather lightly on the chest, parallel to the margin of the dullness to be defined The note thus obtained, whether loud or faint, according to the force used, is clear

When comparing the dullness in the erect with that in the recumbent position, in order to avoid possible errors of observation due to differing modes of application of the left hand to the chest, the left hand has been applied in both positions in the same way, with the fingers directed towards the abdomen

On the other hand the methods now in common use are by no means such as are theoretically approved in text-books Comparatively few persons percuss loosely from the wrist or use their fingers as we have described Two or three fingers are often used together to strike with they are not bent to strike perpendicularly to the chest wall and the impact is often more of a push than a blow The results are what might be expected The note is not clear and is sometimes scarcely even audible Such indistinct percussion sounds are quite incapable of defining dullness with precision Nor is this faultiness of method confined to the careless or to the second rate We have sometimes been filled with admiration, whilst listening to the percussion of better men than ourselves, at the acumen which could deduce anything from sounds so inadequate

And for this the reason seems to us not far to seek We venture to believe that the teaching of percussion is much below the high level otherwise maintained in medical education It would appear that percussion is thought too simple an affair for serious trouble to be taken with it But that is a most unfortunate mistake A good method of percussion —i e, one capable of producing a clear clearly audible note —does not come naturally to anyone *except a pianist*, and often great pains must be spent upon its acquisition Let us ask ourselves how often such pains are taken, or how often the need for them is insisted on Not commonly, we believe And so a most important means of clinical investigation is not commonly acquired

The history of percussion itself illustrates the difficulty the profession has always found with it Auenbrugger of Vienna, published his discovery of digital percussion in 1761 Yet little came of it for nearly half a century Then in 1808 Corvisart Napoleon I's physician, lighted on Auenbrugger s work and republished it in French with commentaries of his own Even then, according to Sahli,[5] it did not become the common property of physicians until the second half of the nineteenth century Something like a hundred years for the profession to acquaint itself with one of the most valuable clinical methods we possess!

In conclusion, we hope that the points we have raised will receive indulgent examination For if we are right—and there is at least a reasonable case for our contentions—diagnosis and prognosis in heart disease are now commonly rendered defective to a serious degree, and, if this be so it needs no tedious arguments to show that the progress of cardiology is thereby seriously interfered with

References —1 The Influence of Posture on the Normal Cardiac Sounds and on the Normal Cardiac Dullness Med Chir Trans vol lxxxix 1906 2. The Rightward Edge of Cardiac Dullness Brit Med Jour June 4th 1910 3 The Cardiac Dullness in Cases of Cancer Med Chir Trans. vol lxxxvii 1904 Diminished Cardiac Dullness in Cancer Brit Med Jour August 8th 1908 Further Experience of the Cardiac Sign in Cancer ibid May 31st 1913 The Value of the Cardiac Sign in Cancer THE LANCET Jan 17th 1914 The Value of the Cardiac Sign in the Diagnosis of Gastric Cancer Practitioner April 1914 On Digital Percussion and the Cardiac Sign in Cancer Bristol Med Chir Journ March, 1914 4 Besides the above Bodily Posture and Cardiac Physical Signs THE LANCET August 10th 1907 5 Sahli: Diagnostic Methods Potter s translation p 199

NERVOUS CRETINISM

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Major R McCarrison I M S, in his lectures on goitre published several years ago,[1] declared that he has observed in Gilgit, and other places where cretinism is endemic, certain cases in which some *indicia* of cretinism are associated with nervous disorder of the nature of spastic diplegia He referred to these cases as "nervous cretinism," and described them as being often longheaded deaf mutes typically exhibiting a knock kneed spasticity of the legs with a stiff bobbing gait, and exaggerated knee jerks He stated also that the upper limbs are frequently spastic with the thumb tucked into the palm whilst the toes are often flexed on the sole The face was spoken of as "cretinoid," coarse nystagmus was mentioned as frequent, and variable squint as not uncommon

A picture was drawn, in fine, of a kind of idiocy, associated not with the physical characters of the orthodox cretin but with cerebral "*spastic diplegia of the types so* common at our out-patient departments and in our large institutions, and a definite relationship was established, on various grounds including that of therapeutic result, between these cases, and the commonly recognised cases of endemic dysthyreosis known as "cretins' At the same time the existence of *minor degrees of "nervous cretinism'* was clearly indicated

Demonstration of Cases in England

Little notice, unfortunately, was taken of this portion of Major McCarrison s lectures, but Dr (Major) Frederick Langmead, in 1913, demonstrated what he suggested to be a case of "nervous cretinism"[2] which was somewhat freely criticised in that the child did not appear to be a cretin in the ordinary sense of the word—one of the chief points made by McCarrison himself!

Such criticisms were, however, not substantial, and there is no doubt I think, that Dr Langmead did indeed show a case of dysthyreosis of the type called 'nervous cretinism" by Major McCarrison It at once called to my mind a private patient of my own a *little girl*, whose mother suffered from a mild degree of exophthalmic goitre, and who was brought to me because, to use the mother s own words "she always stood on her toes and pointed them in a funny way" There was, indeed, a tonic and persistent spasm of the calf muscles and the child walked badly She was cutting her last milk teeth and I thought she looked hypothyroidal I ordered her some thyroid gland substance for that reason and, on seeing her again some weeks later found that the gait was much improved and that the spasm had disappeared

At the time that Dr Langmead showed his case I was attached to the Belgrave Hospital and was able, in the course of a few months, to find several cases (corresponding to McCarrison s description of the milder types) which improved on thyroid feeding One of *these* was shown at a meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine[3] My predecessor, Dr Hildred Carlill had seen the child some months earlier, before, indeed, the onset of the nervous symptoms and had marked the case sheet "? hypothyroidal " When I saw her there were spasm and weakness of the legs, and the "cretinoid" manifestations were as slight as they usually are in these cases But the spasm and diplegia disappeared completely under thyroid feeding and the child began again to talk freely She had latterly been relatively mute

I therefore express the opinion that, just as McCarrison has established the existence in places where cretinism is endemic of a spastic diplegia of varying degree, relieved, at any rate, when not of long standing, by thyroid treatment, so also in England are sporadic cases of similar nature to be met with *if looked for* In nearly every case of this nature that I have seen there has been definite evidence of dysthyreosis in the mother or in one or more other children of the same family

A Form of Thyroiditis in Brazil

Reference must now be made to the work of Chagas who is the discoverer, in Brazil of a peculiar "epi endemic" variety of thyroiditis associated with a trypanosome infection, and who insists that a proportion of the individuals attacked by this trypanosome (*T cruzi*) and developing the specific thyroiditis come to suffer from a kind of ' Little's disease" or ' cerebral diplegia," whereof the signs and symptoms vary from slight spasticity, with increase of knee jerks and tottering gait, to absolute idiocy and gross spastic diplegia.[4]

I do not know that Chagas has treated any of his cases with preparations of thyroid gland, and I gather that he is inclined to attribute the amentia and spastic palsy to cerebral changes wrought by the trypanosome rather than to any consequence of the thyroiditis itself, but the fact remains that he, independently of McCarrison, has established the clinical co-existence of dysthyreosis and spastic diplegia

And moreover, one must recall that which has been written or is known concerning the relation between the thyroid the parathyroids, and tetany making particular reference to the valuable paper by Paton and Findlay and to the letter by Dr Forsyth in response thereto, that have recently appeared in the *British Medical Journal* [5] [6]

Bearing in mind, too the association of lenticular degeneration with a form of hepatic disease, it is foolish to assert as I have heard it asserted on *a priori* grounds, that the cerebral changes of Chagas's long standing cases can have *no* relation to thyroidal or parathyroidal insufficiency, and equally unwise hastily to discredit the suggestion that there is a definite spastic diplegia to be met with in England associated with dysthyreosis and relieved by thyroid feeding

Later Observations Description of Condition

Since returning from France early this year, after an absence of more than two years that has broken all links with the 10 or 12 cases I had under observation in 1914 I have come across ten or a dozen more of which eight are at present under treatment and definitely and steadily improving and I venture therefore provisionally to summarise some present conclusions in dogmatic form —

The nervous symptoms that are associated in the child with atypical athyreosis are *to be* recognised as forming degrees of the state described by McCarrison as "nervous cretinism "

Nervous cretinism " occurs in England possibly endemically but certainly, if not sporadically," at any rate without obvious endemic associations

In almost every case that I have seen which appears to deserve the appellation of nervous cretinism," there has been evidence of dysthyreosis in the mother or other members of her family

The earliest manifestations of *mild* " nervous cretinism " are generally regarded as ' tetany, and occur towards the end of the second year of life (or a little later) when the child has well learnt to walk and talk

There is sometimes seen about this time a pale puffiness or fatness that represents the myxœdematous phase of dysthyreosis, it is usually only transient and there is some reason also to think that the nervous symptoms themselves are not necessarily progressive even when untreated, but may tend towards regression

Following the ' tetany '—or stage of remittent spasm—there may ensue a stage of weakness, with tottering gait and a more persistent spasm that passes into a condition not to be distinguished from "congenital spastic diplegia" or ' Little s disease ' of moderate degree

In the more severe cases mental defect is obvious almost from very earl days, and the early appearance of spasm with nystagmus leads to the confident diagnosis of congenital spastic diplegia

The relation of these cases to the group of "mild" nervous cretinism is shown by the familial dysthyreosis and by the at least partial response to thyroid medication sometimes by familial incidence The mild cases whose nervous symptoms first attract notice towards the end of the second year or thereabouts are not "cretins" in the ordinary sense of the term and frequently, in the beginning, docile and pleasing children They are sometimes, however, broad-headed and their "hypothyroidal" quality may be manifest in the arrangement of their forehead hair and eyebrows, and in the waxen puffiness of their skin

Whilst there is no reason at all to suppose that more than a certain proportion of cases of "congenital spastic diplegia" are really cases of " nervous cretinism " it should be remembered that (*a*) The results of the post-mortem investigations on these cases are oddly puzzling, anomalous, and inconsistent,[7] (*b*) in many cases of congenital spastic diplegia there is *no* history of prolonged, difficult, or instrumental labour, (*c*) oftentimes the mother definitely asserts that the child had "nothing wrong till two or later," and once walked well, (*d*) *familial* congenital spastic diplegia is described

No claim is made for the " cure " of established cases of "Little's disease" or congenital spastic palsy by thyroid tablets, but certain cases of young children, diagnosed by specially competent physicians as "congenital spastic diplegia with amentia," have definitely responded to treatment by thyroid, whilst *cases of "tetany" 'spasm,"* "weak legs," and so forth, recognised as corresponding to McCarrison's milder cases of nervous cretinism, have become quite cured whilst taking the same substance The effects, on similar cases, of parathyroid medication, I have not yet noted

References—1 McCarrison Major I M S : THE LANCET 1908 ii, 1278. 2. Langmead Fredk : Proc Roy Soc. Med 1913 Section for the Study of Disease in Children March 28th 3 Crookshank F G Ibid Nov 28th 4 Chagas Nouvelle Iconographie de la Salpêtrière 1913 xxvi. 1 5 Paton and Findlay Brit. Med Jour 1917 i 575 6 Forsyth Ibid 1917 i 632. 7 Garrod Batten and Thursfield: Diseases of Children

Harley street W

A NOTE ON THE OCCURRENCE OF "BLUE PUS" IN SEPTIC WOUNDS

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C RHODES HARRISON, M B, B S LOND,
CAPTAIN R A.M C (T)

THE appearance of "blue pus" in an open wound has long been recognised as a complication that may occur during the healing process and has generally been regarded as an ill omen and dealt with by the application of antiseptics, such as carbolic acid, with a view to its destruction, the results of this were generally quite successful, the blue colour and peculiar odour disappearing almost at once from the wound

In the many septic wounds with which we have had to deal recently it has struck us as peculiar in what a relatively large number of them the *Bacillus pyocyaneus* has appeared, it makes its appearance suddenly, in wounds both recent and old generally in one that has rather a large open surface pays but a short visit and vanishes as rapidly as it appears

Sometimes in opening the dressing of a wound which has apparently been running a normal course the characteristic odour is at once noticeable and one finds the wound, dressings and surrounding skin all covered with blue pus, the same dressing may be continued and in one, two, or three days all blue colour and odour may have disappeared and the wound apparently returned to its former condition Meanwhile the patient s general condition shows no change, the temperature is not altered, pain is neither more nor less, and in spite of the great disturbance that must have occurred among the microbic inhabitants of the wound owing to the extraordinarily rapid increase of *B pyocyaneus* the short visitation would seem to have brought about no change. It has, however, been our experience that wounds in which this occurs almost invariably do well afterwards , there may be no change for a day or two, but then an improvement takes place, the granulating surfaces become more healthy and vigorous, and healing follows quickly Why this should be is not very apparent, it may be that the very rapid growth of *B pyocyaneus* merely ousts or actually destroys the septic organisms that were present in the wound, or it may be that the bacillus is present from the beginning, and only increases with such vigour when the other organisms are weakening and have lost some of their vitality, so that the wound is already beginning to mend, and thus the spread of *B pyocyaneus* may have no share in bringing about an improvement , in the latter case one would have expected the growth of *B pyocyaneus* to continue instead of disappearing again rapidly as it generally does

It has thus come about that we have learnt to regard the appearance of blue pus in a septic wound as a favourable sign rather than the contrary, fully expecting that in due course improvement will come, and this has been so sure that a trial has been made to see what good would come of infecting sluggish or unhealthy-looking wounds with *Bacillus pyocyaneus* It proved to be rather difficult to get the infection to take , at first the wounds were merely touched with an emulsion of living organisms, and subsequently other more vigorous methods were employed, such as packing a wound with infected gauze, scratching the surface of the wound before infecting it and inserting on to a wound a living culture with the medium The results were variable , in many absolutely nothing occurred, but in some infection took place, and in these a marked subsequent improvement occurred in the condition of the wounds , on no occasion did any harm come to the wound or to the patient. Here, again, the question will naturally arise, Did the infection destroy or oust other organisms and so do good, or was it that only in those wounds that were on the point of improving naturally could infection be obtained ?

An interesting point noticed lately has been that the antiseptic flavine appears to have no effect on the *Bacillus pyocyaneus*, at any rate, in open wounds where septic organisms are also present the two seem quite compatible, to the great advantage of the wound.

From a bacteriological point of view this clinical observation is of interest, for the antagonism of *Bacillus pyocyaneus* to certain other bacteria has been shown by its power to impede the growth of the bacillus of anthrax in cultures and by the injection into an animal susceptible to anthrax of a mixture of the bacilli of blue pus and of anthrax, the latter disease then failing to develop Porcelain filtered cultures of *B pyocyaneus* are said to have similar properties Kitasato found that *B pyocyaneus* prevented the development of the vibrio of Asiatic cholera, and Rumpf claimed similar antagonism to *Bacillus typhosus*, but experiments designed to repeat the latter's observation show that the subject appears to be rendered more than usually susceptible to the action of enteric and of colon bacillus The ferment pyocyanase has been used for the removal of diphtheritic membrane and in the treatment of nasal catarrhs

Bacillus pyocyaneus shows considerable morphological variation and its chromogenic powers seem equally inconstant For example, from one of the wounds described above cultures infected on the first day of the sudden appearance of blue pus in the dressings showed *B pyocyaneus*, which produced abundant brilliant pigment, and by the rapidity of its growth rendered isolation of accompanying organisms difficult, while on the next day the wound and dressings without alteration in treatment presented neither the characteristic colour nor odour, and cultures on the same media showed *B pyocyaneus* in markedly reduced numbers growing feebly, and only after three days producing pigment even that being of the brownish variety, the bluish colour being absent throughout

Although usually harmless and sometimes apparently beneficial to a wound *B pyocyaneus* must always be regarded as at least a possible source of danger, as it can (though rarely) be recovered from the blood stream in certain terminal conditions, and has been described as the primary cause of a few cases of otitis and of enteritis

Experiments *in vitro* suggest that *B pyocyaneus* has little, if any power to impede the growth of *Streptococcus pyogenes* and *Staphylococcus aureus*, though possibly its products in the complex media presented by a wound may be of a different and deterrent nature

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL

◆

A CASE OF STRANGULATED FEMORAL HERNIA

BY THOMAS E COULSON, M D EDIN , F R C S EDIN ,
SURGEON TO THE MERTHYR GUEST HOSPITAL TEMPLECOMBE, AND TO THE WINCANTON AND GILLINGHAM V A.D HOSPITALS

THE following case of strangulated femoral hernia presents some unusual features

Mrs A., a strong, healthy looking woman, aged 50, whose only previous illness was perimastoid suppuration four years ago, gave a history of her present illness as follows During the last five or six months she had been suffering from occasional severe attacks of pain in the right iliac region The pain was so severe that it doubled her up," and if it came on when she was out for a walk it was with difficulty she reached home It usually made her sick, kept her in bed for a day or so, and then passed off, leaving her little the worse except for a bad taste in the mouth and a distaste for food for some days She was constipated, as a rule, both before and after an attack She had never noticed any swelling in the groin during any of this time

On June 1st, 1916, an exceptionally severe attack developed, but passed off as usual next day On June 12th, 1916, she went to bed as usual, but was wakened in the night by a severe pain in the right groin and was sick The pain continued to increase and spread over the whole abdomen It was still present next morning and was getting worse, being now especially severe round and above the umbilicus. She was sick again about midday (June 13th) and sent for me

When I saw the patient about 2 P M she was in bed had an anxious drawn expression, and had just vomited about a quarter of a pint of green stomach contents She complained of pain in the abdomen, coming on in paroxysms, especially in the right groin and just above the umbilicus The bowels had been opened that morning The temperature was 97° F and pulse 68 per minute The tongue was furred and inclined to be dry down the centre The abdomen was slightly distended and tympanitic, but was flaccid on palpation There was no special area of tenderness, but in the right groin was a firm, hard lump about the size of a Tangerine orange, dull on percussion, and with no impulse on coughing I diagnosed a strangulated femoral hernia and advised immediate operation for its relief She was accordingly admitted to the Merthyr Guest Hospital, Templecombe, and I operated at 3 P M that afternoon

Operation —After the usual shaving and painting the skin with chloroformum iodi an incision was made vertically and to the inner side of the lump about three inches long The hernial sac was thin and, on being opened, was found to contain, besides about one ounce of clear fluid, the cæcum and appendix The cæcum was nearly black in colour but shiny in appearance The appendix was swollen to twice its normal size, was black in colour and dull and lustreless in appearance There were also some tough adhesions between the base of the appendix and the peritoneum forming the neck of the sac There was no doubt in my mind that the appendix would not recover if returned to the abdomen , I therefore decided to remove it I first of all cut the adhesions between two ligatures, and, after tying the meso-appendix, removed the appendix and invaginated the stump in the cæcum by means of a purse string suture I then made two small incisions in Gimbernat's ligament, returned the cæcum to the abdomen ligatured the sac as high up as possible, and cut it off below the ligature Making no attempt at a radical cure, as the condition of the patient would not admit of this, I sutured the skin with salmon gut and returned the patient to bed

The wound healed by first intention, recovery was uninterrupted, and she has been free from all pain in the abdomen since the operation, which was performed a year ago

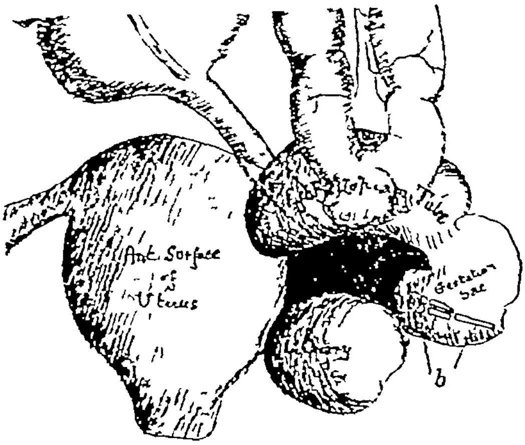
The interest of this case lies in the fact that the patient had before strangulation probably suffered from, at least three attacks of appendicitis of a mild nature but sufficiently severe to cause the formation of adhesions between the appendix and parietal peritoneum Another point of interest and importance is the fact that when the cæcum and appendix became strangulated in the hernia it was the appendix which suffered the more severely, evidenced by the fact that the appendix was dull and lustreless whilst the cæcum was shiny in appearance, this is possibly accounted for by the fact that the appendicular artery anastomoses with the vessels in the cæcum to a very limited extent,[1] so that in the event of it becoming obstructed, gangrene of the appendix is very prone to supervene with great rapidity

CASE OF EXTRA UTERINE GESTATION

By Evelyn A Constable, M B, B S Durh,

SURGICAL REGISTRAR, LONDON TEMPERANCE HOSPITAL.

Patient aged 31 was admitted to the London Temperance Hospital on Oct 10th, 1916, under the care of Dr Kevin Byrne, she had had abdominal pain for 12 months She was married in August, 1914 Confined on Nov 4th, 1915, of her first child at seven months (died in 15 hours) Six weeks later had her first monthly period, which was a heavy one and lasted one week. One month after this there was a very scanty loss every few days up to February, 1916, when a ' piece of shaggy flesh was passed (no blood with it) Then *total cessation* of menses until August after which periods became regular and normal in amount Patient had had abdominal pain since her confinement, but in February last she had "labour like pains," and considered herself pregnant Sent into an infirmary, where she remained from March to July Here she was curetted "for a miscarriage" The pains continued, and patient felt weak



b Fœtal bones

On admission to the London Temperance Hospital on Oct 10th a large swelling was in right side of pelvis and pouch of Douglas No vaginal discharge Uterus slightly larger than normal and pushed over to the left Nov 8th Note by Dr Byrne "The swelling on right side is smaller but still tender There is a swelling not previously observed, in corresponding region to left of uterus She has complained of rather more pain in lower abdomen and extending from right side to left" Nov 12th Menstruating Nov 16th Pain in lower abdomen especially right side much worse to-day Pain on superficial palpation, relieved on *deep* palpation No rigidity Nov 24th Operation by Mr J McClure

On opening abdomen the omentum vermiform appendix, and a loop of ileum were found adherent to the fundus of the uterus on the left side On freeing these (in doing which a small part of serous coat of gut was torn and had to be stitched up) a hard mass was found at the left tubo-uterine junction This turned out to be the left greatly dilated tube and ovary on the surface of which were some fœtal bones (as in figure *b*)—viz, a femur, tibia and fibula also metatarsals of both feet Close to the former and parallel to them were some nodules thought to be the spine with cranium at lower pole Parts removed were both Fallopian tubes, left ovary, gestation sac and vermiform appendix Patient made an uninterrupted recovery

I am indebted to Dr Byrne and Mr McClure for permission to report this case.

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[1] A Treatise on Applied Anatomy by E. H Taylor p 455

St Thomas's Hospital Medical School — R H O B Robinson King's College Cambridge, has been awarded the University Scholarship of £50

Reviews and Notices of Books.

1. *The Causes of Tuberculosis* By Louis Cobbett, M D Camb, F R C S Eng, University Lecturer in Pathology, Cambridge Cambridge The University Press 1917 Pp 707 Price 21*s* net
2. *Clinical Tuberculosis* By Francis Marion Pottenger, A M, M D, LL D With a chapter on Laboratory Methods by Joseph Elbert Pottenger, A B, M D In two volumes London and Glasgow Henry Kimpton 1917 Pp 1416

1. This book on the Causes of Tuberculosis is primarily a digest of the work of the late Royal Commission on Tuberculosis, of the reported activities of the Local Government Board, of the Health Department of the City of New York, and of the Imperial Board of Health of Berlin It is also a good deal more, for the author, who has personally contributed much spade work to researches on tuberculosis, has gone considerably further afield in collecting valuable material He has also brought out his facts so skilfully that the validity of most of his conclusions will be questioned by few His is the ambitious object of providing a book at once for the medical profession and the lay public Undoubtedly it will prove useful to both and as a basis for lectures both to students and the public it should be invaluable The earlier chapters deal with the incidence of tuberculosis and the wonderful decline in the mortality from this cause during the last half century On the basis of the calculation that ' the ratio of deaths to population has fallen by more than 50 per cent " in this period, the author anticipates that ' tuberculosis will have become a rare disease before the end of the century " One of his most interesting conclusions is that in the case of both human and bovine tuberculosis " in the main it is the large doses of bacilli which are dangerous, and that small ones are often harmless or even beneficial by increasing resistance " His recommendations for combating both these forms of tuberculosis reflect this view The author is in favour of segregation, but he thinks that compulsion with this object must except in very exceptional cases, be renounced He is as a rule, so careful to weigh available evidence before attempting to formulate his conclusions that it is surprising to find him digressing from his main thesis to pass judgment on the achievements of sanatoriums without adequately reviewing the arguments for and against them They "take," he says, ' away with one hand what they give with the other " This attitude is surprising in a "segregationalist," as the provision of ample sanatorium accommodation automatically helps to solve the problem of segregation in the least objectionable manner To recommend segregation without a full discussion of all it implies is dangerous in a book partly intended for non medical readers The book, as an exposition of present-day knowledge of the causes of tuberculosis merits unreserved praise

2 Progress in our knowledge of tuberculosis is, along certain lines, so rapid that the sight of these bulky volumes at once suggests the mournful reflection that in a few years they may be out of date But on closer scrutiny these regrets prove superfluous, for this work is not just a compilation of others' researches brought up to date It represents rather the experience and thoughts of one man—the author His is a record of observations made during 20 years of clinical study conducted mainly at the Pottenger Sanatorium, California, and the reader will be struck by the originality of thought and the consistency of effort directed along certain specialised lines And yet the author shows a catholic knowledge of other aspects of his subject In the chapter on modes of infection the author says he has not had a single case of direct infection of employees and attendants in sanatoriums brought to his attention He sees in "massive" infection of children the chief danger which if avoided, would greatly limit active tuberculosis in the adult Further, he believes that recognition of the significance of early lymphatic tuberculosis would supply "the key to the tuberculous problem" He notes that tuberculin in childhood may often be the determining factor for good between the years 5 to 10 or 12. In a later chapter he says of tuberculin that after 20 years experience, he

believes that, properly administered, it "will add at least a minimum of 20 per cent to the chances of healing" But he is evidently no blind tuberculin fanatic, and he insists on its uselessness except in the hands of the expert prepared to individualise and to avoid all routine or haphazard methods A distinctive feature of the chapters on diagnosis is the almost meticulous study of symptoms, of which, even in the early stages, about 30 are described By careful analysis these symptoms are placed in three groups according to their etiology, which may be toxæmic, reflex, or local (the tuberculous process *per se*) Nervous instability belongs, for example, to the first group, cough to the second, and hæmoptysis to the third The author then tries to show how toxæmia can produce nervous instability and reflex action produce cough His main clue to these problems is sought in the nervous system, and he is indefatigable in following up the paths of reflex action As he says —

> In tuberculosis we must conceive of a condition in which both the vagus and the sympathetic systems are simultaneously stimulated, but one in which either one or the other usually yields with a resultant disturbed equilibrium

This, for example, is how he analyses the rapid pulse of tuberculosis (p 231) —

> It has long been said that a persistently rapid pulse in tuberculosis means a bad prognosis While this is not invariably true, there is some ground for it, because it means that the patient's sympathetic tonus is in the ascendancy It would be more rational to state that those patients who are distinctly of the sympathetic tonus type, or those people who have a decreased vagus tonus, which means practically the same thing, are not as able to withstand the disease as those who have increased vagus tonus

The author attaches great importance to the mental factor in tuberculosis, and he sees in the possession of magnetism, "Geist," personality by the physician an almost essential qualification Thus (p 651) —

> I would rather have a patient treated in a room, if I could give him the benefit of hydrotherapy and psychotherapy, with good food, than treat him in the open air with hydrotherapy and psychotherapy omitted

We have dwelt rather on the unusual than on the more commonplace features of this book, so let us add that it also represents broadly speaking, the views of the ablest pathologists and physicians of the day on the various aspects of tuberculosis The author has a trick of iteration The points he would emphasise and establish as pivots about which lesser factors revolve recur again and again They constitute refrains running throughout his work It would be easy enough for him greatly to condense what he has to say, but it would be at the loss of a fluent easy rhythm which conveys a vast store of knowledge The book offers no points of comparison with the average text-book and forms a comprehensive survey of its subject

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1 *Les Psychonévroses de Guerre* By G ROUSSY, Professeur agrégé à la Faculté de Médecine de Paris, and JEAN LHERMITTE, Ancien Chef de Laboratoire à la Faculté de Médecine de Paris With 13 plates Paris Masson et Cie 1917 Pp 187 Price 4 francs

2 *Hystérie Pithiatisme et Troubles Nerveux d'Ordre Réflexe* By J BABINSKI, Membre de l'Académie de Médecine, and J FROMENT, Professeur agrégé Médecin des Hôpitaux de Lyon. With 37 figures and 8 plates 1917 Pp 267 Same publishers and price

1 THIS useful little volume is one of the latest additions to the series of war monographs published by the well known house of Masson The authors include under the term psychoneurosis every variety of functional disturbance from the simplest to the most complex, from those whose expression is almost entirely physical to those where psychical symptoms predominate Thus they comprise in their précis impairment of gait, involuntary movements of all sorts, sensory phenomena, disturbances of the special senses visceral troubles anxiety hysteria and the various mental symptoms of head injuries shell shock cases, and the other pathological states with which the war has made us familiar A chapter is devoted to commotio cerebralis The etiology of these different neuropathic and psychopathic conditions is outlined in some detail, and several sections are taken up with an attempt to guide the reader to a clear understanding of the part played by "simulation exaggeration" and 'simulation prolongation" The chapters on treatment are particularly good The rôle of the physician, and of the patient, the environment, and the exact procedures desirable receive full consideration The authors believe in reasoned and persuasive psychotherapy after the manner of Dejerine, Dubois, and Babinski They hold that suggestion under hypnotism should be abandoned altogether In their hands the methods here specified have been successful in from 98 to 99 per cent of cases

2 In view of the therapeutic importance of clearly distinguishing hysterical from other functional disorders of the central nervous system arising in the course of warfare a practical knowledge of their differential diagnosis is essential We do not know any modern volume in which the reader will find these difficult subjects so lucidly explained as in this not merely because one of the best working hypotheses of hysteria is associated with the name of M Babinski, but also because of the learned way in which the peculiarities of the condition known as reflex paralysis, often confused with hysteria, are here presented for consideration Reflex paralysis is a subject to which much attention has been given, yet in England the profession as a whole can scarcely be said to be familiar with it, since, however, it appears to occupy a place intermediate between the organic and the functional, its importance is considerable No doubt in this excellent little book the authors are more concerned with an exposition of their own views than with an examination of the views of others but its obvious merits should commend it to all who are in search of a compendium of information on war hysteria and allied conditions where questions of diagnosis, prognosis, and treatment are handled at some length There is, at the same time, more in the book than its appeal to the physician on the ground of practical usefulness, its appendices contain observations of much scientific interest for the neurologist, and there is a bibliography of some 250 references There are illustrative photographs and diagrams

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Microbiology A Text book of Micro-organisms General and Applied By Various Contributors Edited by CHARLES E MARSHALL Professor of Microbiology and Director of Graduate School, Massachusetts Agricultural College Second edition revised and enlarged With 186 illustrations London J and A Churchill Pp 900 Price 12*s* 6*d* net

IN a review of the first edition of this book in THE LANCET of April 27th, 1912 the special features which distinguished the work were noted at some length It differed from the ordinary text-book in that it was a collection of short monographs by specialists and not the product of a single author There was, however, less overlapping and greater uniformity of treatment than might have been anticipated Further, the book was not apparently directed to the needs of any special group of readers, but furnished part of a general liberal education Its descriptive title was "Microbiology for Agricultural and Domestic Science Students," and "domestic science" was interpreted so as to include the diseases of men and animals plant diseases, sanitation, and, in fact any subject in which micro-organisms played a part The articles were not, however, of a popular character, but were a series of able, if necessarily limited monographs All laboratory methods were eliminated The qualifying expressions of the original title have now been dropped, and the book is described as an elementary technical treatise on the subjects included under the term microbiology, but there is no essential change in this second edition either in method or scope There has been a general revision of the work, and certain additions have been made which have increased the size of the book by some 300 pages while the illustrations are also more numerous The cytology of micro-organisms has become more defined in recent years and has received additional attention in the present edition at the hands of Dr Guilliermond professor of botany at Lyons A chapter has also been added on intestinal microbiology The space devoted to the microbial diseases of insects has been increased and especial attention is paid to those diseases which are of economic importance such as that caused by *B acridiorum* in locusts and those which affect bees

The book certainly gives a good general view of a very wide field of knowledge The size of the book still remains moderate and no fault can be found with the type and general appearance

Cerebellar Abscess, its Etiology, Pathology Diagnosis and Treatment, including Anatomy and Physiology of the Cerebellum By ISIDORE FRIESNER, M.D , Adjunct Professor of Otology and Assistant Aural Surgeon Manhattan Eye, Ear, and Throat Hospital New York, &c. and ALFRED BRAUN M D F A.C S Assistant Aural Surgeon, Manhattan Eye, Ear, and Throat Hospital New York, &c With 10 full page plates and 16 illustrations in text. London William Heinemann 1917 Pp 186 Price 12*s* 6*d* net.

THE authors have compiled a useful monograph on cerebellar abscess in all its bearings The sections on the anatomy and physiology of the cerebellum contain a résumé of the most recent work on the subject, of German origin be it remarked for while Lewandowsky Rothmann and Bárány are quoted from freely there is little apparent appreciation of the investigations of Horsley and R H Clarke and the valuable researches of André Thomas and Durupt on cerebellar localisation are ignored Further in the sections on symptomatology Bárány s tests are described in full, but there is no reference to the methods of Babinski, which are in some ways preferable It is curious too that while investigations associated with the names of German workers are usually quoted from the original sources methods of examination for which we are entirely indebted to the French and English schools of neurology are freely described without any acknowledgment of their origin The apparently one-sided nature of the writers' knowledge of cerebellar research is regrettable

From the clinical standpoint the common cerebellar symptoms are on the whole fairly presented to the reader though we notice a differentiation is drawn between the character' and the "behaviour" of nystagmus which is far from clear Further we are of the opinion that a greater acquaintance with cerebellar disease other than abscess might have led the authors to modify certain of their statements Tremor is mentioned but its localising significance is not stated, deviation of the head in certain cases is referred to, but not described in the specific way in which it usually occurs Cerebellar gait is not noted except in the briefest fashion, dysmetria asynergy, and adiadokokinesis are described separately without any hint of their interrelation The chapters on the prognosis and treatment of cerebellar abscess are, on the other hand, more complete and satisfactory

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The Treatment of Tabetic Ataxia by Means of Systematic Exercise By Dr H S FRENKEL, Medical Superintendent of the Sanatorium Freihof in Heiden (Switzerland) Second revised and enlarged English edition by L. FREYBERGER, J P M D Vienna, M R.C P Lond Barrister at-Law of the Middle Temple &c. With 129 illustrations London William Heinemann 1917. Pp 209 Price 12*s* 6*d* net

Dr Frenkel s exercises for the treatment of the ataxia of tabes dorsalis have become justly famous and their abiding value in the tackling of a troublesome symptom has been demonstrated over and over again in the experience of physicians of all countries Their rationale can be readily grasped when we remember the words of Hughlings Jackson that when the dorsal columns of the cord are sclerosed the tabetic walks badly 'with what of his cord is left." Hence the importance of endeavouring to educate rather than to re-educate the muscle groups by a new combination of the eye and what remains of the cutaneous and deep sensory apparatus In this new edition there is full appreciation of the fact that the cause which keeps up the sclerosing process in the central nervous system must be obviated as far as possible by specific treatment and in the last chapter modern methods are described with some detail. It is not the purpose of the book however to go into this question completely But given a tabetic in an early stage or for that matter in a chronic stage his ataxia other things being equal will certainly be influenced favourably by patient treatment along the lines here described with ingenious care We have said that Frenkel s exercises are familiar to the physician, he should become a possessor of this handbook to realise how much the method can effect and how applicable it is to all forms of impaired control over the muscular system

JOURNALS

Military Surgeon (Washington, D C, U S A.)—The September number of this journal contains several articles of value on war surgery Dr E B Downer Red Cross surgeon in Serbia and director of a private mission to Russia, reports excellent results from bone-grafting in the treatment of ununited fractures The surgeon who takes up this branch should be first a skilled mechanic and next requires motor-driven tools Dr Downer declares he himself has the only motor driven outfit in Russia Bone splints lead to bone formation but steel plates prevent it The author's observations on surgical methods in each of the successive years of the war are judicious and should be read —Lieutenant-Colonel W L Keller, Medical Corps U S Army, sends a valuable paper on Surgical Work in a United States Army Hospital Amongst other things he describes a novel and successful treatment for bubo and for phagedænic ulcer The Report of the Mesopotamia Commission is reviewed It is regretted that the Commission included no medical member and it is noted that under those circumstances it was unlikely the medical department would escape censure It is observed that the preservation of the health of an army, and the efficient removal of its wounded have so much influence on the success or failure of every military undertaking that 'so long as the medical department has no representation on the General Staff there never can be any team play in an army"—Colonel Goodwin, A.M S, in an address to the United States War College, states as having held the post of A.D M S of two divisions in France that when he has heard staff officers declare a particular A D M S "difficult to manage,' he has considered that a great compliment had been paid to the administrative medical service He observes that the higher the discipline of a unit the more efficiently is its sanitation carried out, and that sanitarily the best conducted troops are the Guards He further notes that to avoid ' a medical breakdown' after an action, the A.D M S must secure information in advance from the headquarters staff For he is always working with a rope round his neck and when the medical breakdown comes as come it will it is he who will be "hanged," so he had better get this delaying of information removed before the breakdown it is rendering inevitable occurs —The same issue of the journal contains an interesting account by Lieutenant-Colonel E L Munson of an outbreak of measles occurring in a military camp in Texas in which the author lays stress on the respiratory symptoms

Archives de Médecine Navale —In the issues of this journal for June and July Dr René Potel, médecin de 1re classe of the French Navy gives an account of an epidemic of typhus fever amongst Serbian soldiers and the Frenchmen who associated with them in February and March 1916 On Feb 1st 2400 Serbian soldiers who had escaped from Serbia after many hardships were embarked at Corfu in the French transport *France IV* for Tunis. There was neither time nor opportunity to clean them before embarkation nor even to give them clothing and they came on board in their rags On Feb 12th cases of typhus began to appear among the French sick berth staff, in all, 14 of the ship s company were attacked These men were on arrival sent to the naval hospital at Bizerta where they being few were completely cleaned and no further cases occurred The 486 Serbian cases were sent to Sidi Abdallah, near by where emergency hospitals had been prepared for them but as they arrived in scores and hundreds little could be at once done beyond washing them and putting them into clean clothes, they were not like the others shaved and so freed from nits and 21 days after their arrival cases of typhus began to appear amongst the medical officers and the orderlies This period of 21 days was occupied, it is suggested three days of it in the hatching of the nits and the development of the parasites therefrom, eight days in the maturation of the cause of the infection within these young parasites and ten days in the incubation of the fever in the bitten human patient Ten days after there had been time to work over all the patients to get them shaved completely and their bedding disinfected no more cases occurred. The cases amongst the Serbians were numerous but mild, those amongst the French few but severe Dr Potel observes that the sanitary measures employed were directed against lice only, and that they brought the epidemic to an end Whence he concludes that it is by lice and by lice only that the fever was spread The measures taken became more rigid as time went on At first men were allowed to keep their purses and tobacco pouches, but later they had to leave all their possessions behind As to diagnosis, Dr Potel notes that this is at first difficult, as there is so much resemblance to enteric The temperature, however, is high and steady without the marked morning remission of typhoid fever, beside the cutaneous rash there is a blue punctate rash on the congested soft palate, there are headache, wakefulness, abolition of the superficial reflexes, and a hebetude which may by persistent provocation be changed to irritation During convalescence, it may be said the pre existence of typhus is shown by exaggeration of the deep and loss of the superficial reflexes, great wasting, poor sleep, and nocturnal pains in the legs In doubtful cases the injection of 40 minims of the patient's blood, intraperitoneally, into a guinea pig will produce in ten days the characteristic symptoms Dr Potel was very fortunate in being able to get an antityphus serum from Dr Nicolle—apparently (it is not definitely stated) the non centrifuged serum of an ass carefully immunised [1] Of 3 cases without serum 2 died, of 31 treated by serum, cases equally grave all but 1 recovered The devoted work of the French medical staff who suffered so heavily in their splendid work for the refugee Serbian soldiers is made clear in the report, from which it also appears that if the embarkation at Corfu had been definitely delayed and spread over two days, while the Serbians were in turn being washed and shaved and embarked, and having their clothes boiled, this epidemic would have been much lighter We learn that a medical officer stood out against receiving the Serbians till these things were done, and if he had had his way his orderlies would have been saved from disease, and his country from much unnecessary expense

Reports and Analytical Records

FROM

THE LANCET LABORATORY

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The curious characteristic of dry wool fat of readily emulsifying into a uniform cream with water renders it a valuable skin application Hydrous lanoline is thus easily absorbed by the skin, rendering it supple and smooth without leaving a greasy impression. The sample submitted to us contained, according to our analysis, exactly 30 per cent of water, while it was entirely free from mineral matter On heating, the creamy mass melted and the water and wool fat separated, and after a time a clear yellow oil remained It is pointed out that while this preparation is primarily intended for toilet use it is also suitable for application in many skin conditions particularly as the wool fat employed is highly refined It is delicately perfumed

JARDOX

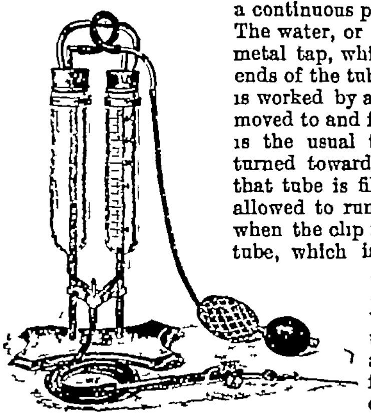
(Jardox Limited, Crystal Palace Works, Anerley, London, S E 20)

Jardox is a viscid meat expression which, in addition to the ordinary extractives and bases of meat, contains a notable proportion of finely divided fibrin, as well as coagulable albumins On analysis the following results were obtained Moisture, 35 00 per cent, total meat derivatives, 55 30 per cent, mineral matter 9 70 per cent The meat derivatives were made up of 50 per cent extractives and bases and 5 30 per cent. of fibrin and albumin The presence also of a notable proportion of proteoses was confirmed, inasmuch as a material yield was obtained on the addition of saturated ammonium sulphate solution The mineral matter was chiefly salt and potassium phosphate The flavour is agreeably "beefy" and not too rich Besides its stimulating properties, this preparation provides a definite food value due to proteoses, fibrin, and albumin, which renders it useful for invalid purposes and also for general use as an emergency restorative

New Inventions.

A ONE MAN "606" APPARATUS

This apparatus is easily portable, easily taken to pieces for sterilisation easily rearranged, and all the parts can be replaced, and it is safe There are two vertical glass tubes connected above by corks to an ordinary spray bellows which by frequent compression give a continuous positive pressure within The water, or "606," runs through a metal tap, which is connected to the ends of the tubes by rubber, the tap is worked by a handle which can be moved to and fro at will—beyond this is the usual tube The handle is turned towards the water side, and that tube is filled up and the water allowed to run until it is free of air when the clip is closed The "606" tube, which is divided into 30 c c and subdivided into 10 c c is then filled with one or more doses, the corks firmly put in and the air pressure fully raised, and, the corks holding the operation can be started Directly the vein is entered the water runs down the glass and the handle can be then switched on to the "606" and the measured quantity allowed to run in The "606" is then turned off, and it is washed in by the water till the colour disappears in the window On the first occasion I gave 22 injections, and I have always found it to work well, and since then I have given 41 in an hour The left hand must always be on the needle and the right hand free to move the handle, &c

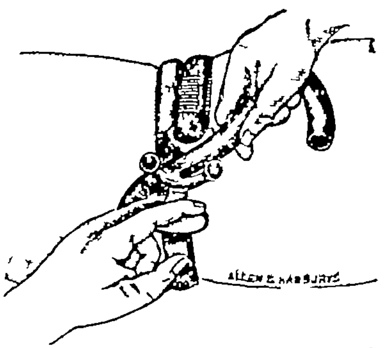


The apparatus called the Simplex "606" Infusion Set is manufactured by A Day 8 Albemarle street Clerkenwell E C 1, and is obtainable from all surgical houses

James S Robertson
House Surgeon, London Lock Hospital

A MODIFIED ANCHOR TOURNIQUET

In the ordinary pattern of Samway tourniquet though the anchor catch gives a satisfactory hold, it is not easy to fix the instrument at the required tension nor can it be rapidly detached These shortcomings are due to the lack of any part of the apparatus upon which a firm purchase can be obtained To provide this I have had a handle added in rigid continuity with the anchor The form is sufficiently shown by the illustration It will be found that a tourniquet fitted with this modified anchor can be readily applied at any tension and can be rapidly detached, even when out of sight The pattern shown has been made for me by Messrs Allen and Hanburys Wigmore street, W



C Max Page, M B M S Lond
Captain R.A.M C (S R.)

Presentation to a Medical Man —Mr F C Fitzgerald, who has been dispensary medical officer of the Newtownbutler district of co Fermanagh for the pas 40 years, has been presented by his patients with an illuminated address and a cheque for £350 his wife receiving a gold watch

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[1] The Lancet 1916 i, 1187

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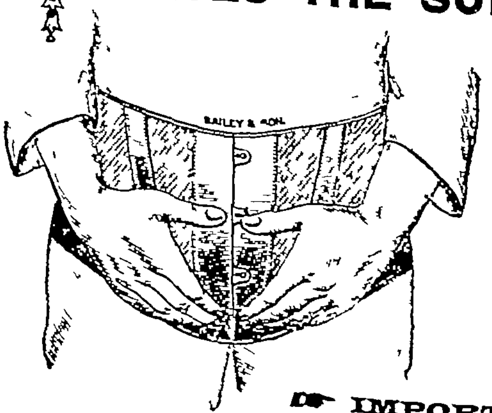

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16-oz bottles	**1/6** each
8-oz ,,	**1/-** ,,
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THE LANCET.

LONDON SATURDAY OCTOBER 20, 1917

Success and Failure in the Treatment of Tuberculosis

GLOOM has fallen on the *treatment* of tuberculosis, at all events in the public mind The keen hopes raised by the open air methods introduced from Nordrach, by the Edinburgh dispensary scheme, and by the Frimley graduated exercises have died down During the years when these pioneer methods were being worked out the death rate from tuberculosis was falling steadily from year to year, and although critics were not wanting to point out that this fall in death rate was nothing more than a continuation of the steady fall already in progress during the last half century, and even possibly the diminution of this rate, yet the feeling was widespread that a new and hopeful era in the treatment of tuberculosis had been introduced How different is the position now Sanatorium treatment is regarded by many as having failed in its promise and succeeded merely in interposing an interval of improvement in the inevitable course of a fatal disease The death rate from pulmonary tuberculosis has risen during the last three years in a way which no thoughtful person can overlook The figures from headquarters are given in another column by SIR ARTHUR NEWSHOLME, who adds an instructive table of the rate for the last three years in comparison with the favourable year 1913 Both 1915 and 1916 show a 12 per cent increase on 1913 in the death rate from pulmonary tuberculosis, and it must be remembered that in a slow disease like tuberculosis the death rate is rather a clue to conditions prevailing in previous years The discouragement extends to all the schemes, set in motion on the recommendation of the Departmental Committee on Tuberculosis in 1912, in spite of a vast amount of trouble and administrative machinery we have not kept pace with the disease The tendency is a natural one to regard the whole of this machinery as useless and to wish it scrapped for something better The contrast is so vivid between apparent administrative failure in regard to tuberculosis and the dramatic success achieved in stamping out enteric fever by means of prophylactic measures, that increasing pressure is being brought to bear on authorities to treat tuberculosis as a contagious disease and the sufferer from tuberculosis as a social pariah to be isolated from his fellows

It may not, therefore, be out of place, even at the risk of wearying the well informed, to return once more to the essential difference between the course of tuberculosis and that of strictly limited acute infections As the late W R HUGGARD acutely observed, the dead house has no bias, and the observations of NAGELI on the prevalence of tuberculosis in hospital autopsies at Zürich have never been challenged Quite recently his figures have been confirmed from another pathological institute in Switzerland by Dr. A REINHART,[1] who found in a series of 360 consecutive autopsies only 13 bodies which did not afford evidence of previous infection with tubercle This indicates that 96 per cent of the ordinary hospital population of Berne, a bleak but not unhealthy city, have had tuberculosis, and of these only 32 had progressive lesions at the time of their death, while 64 per cent had healed foci consisting merely of calcified scar tissue Dr REINHART cautions his readers that the result of hospital material must not be applied to the generality of mankind without due consideration, and that the post mortem material of the war will alone afford conclusive evidence of the extent of tuberculisation, but his conclusion is unassailable that tuberculosis is acquired and recovered from without treatment by a vast majority of civilised people This stamps it at once as a social disease which cannot intelligently be dealt with on the lines of acute epidemic disorders The Departmental Committee, recognising this, set in movement a vast social organisation to deal with tuberculosis, and the question which must be asked is whether this herculean labour has shown any commensurate results The answer is emphatically that neither material for proof or disproof is yet available SIR ARTHUR NEWSHOLME tells us that in 1911 there were 1300 beds available for the institutional treatment of tuberculosis and about 25–30 tuberculosis dispensaries in action During the two years *following* many local authorities were persuaded to establish tuberculosis schemes Then came the war, which put a stop at once to the realisation of any schemes recently initiated and prevented the full working out of those already in action But the war did more than this It brought with it precisely those factors known to have a harmful influence on tuberculosis Obviously the restriction of food supply, which has had such a terrible influence in Belgium and the districts of France in German occupation, has not been a widely felt influence in this country, but the results of mental stress and physical strain have been the same, although in less measure With regard to the fighters themselves, it was contended with some show of probability that the free open air life of the trenches, with abundant food and exercise, might exert a favourable influence on the course of tuberculosis acquired in town life In the full light of his official knowledge SIR ARTHUR NEWSHOLME says No A few consumptives have been able to withstand the strain of active warfare, the majority unfortunately have broken down and he adds that the records already show a material national increase in tuberculosis due to the war

The position, then, is this Tuberculosis is being given a new start while the measures for its control

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[1] Anatomische Untersuchungen über die Häufigkeit der Tuberkulose (from the Pathological Institute at Berne) Corresp f Schw Aerzte Sept 8th 1917

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said with reason, that the latter has been shot in the head and the former has been shot in some other part. Is this a sufficient justification for making their futures so different? We scarcely think so. We are bound to give due weight to the sentimental aspect of the problem, though not at the expense of abandoning our professional view that any measures calculated to enlighten public opinion on the unreality of the insane stigma should be patiently emphasised.

Another point arising out of the discussion must not be ignored, especially as we have reason to believe the Board of Control may be in possession of facts not accessible to the lay public. It is impossible in many cases to tell an epileptic patient by merely looking at him, nor will a routine medical examination necessarily reveal the truth. Such men may therefore be accepted in good faith by the authorities, but before they have been in the Navy or Army a week they may develop fits and be transferred to a Service hospital. They have been of no value whatever from a naval or military point of view, and the appearance of epileptic degeneracy may not be far distant, yet meanwhile separation allowances and the usual privileges are granted. It is possible that in some cases medical officers may have been deliberately deceived for the sake of the monetary advantages. Similarly, in the lucid intervals of certain forms of recurrent insanity men may have been accepted, though only by reason of denial on the part of the recruit or his relatives of the facts of the case. Again, certain forms of mental disease, in an early stage may have been missed by the medical officer for one reason or another. Technically these patients have become sailors or soldiers, but they have passed through no "extraordinary vicissitudes" to develop their disease, quite the contrary. They have been accepted but only as the result of the suppression of material data, and we are not inclined to regard any attempt at discrimination between such and the genuinely traumatic insane as sophistry or refinement. There is at the least, another side to the proposal that all insane Service men should be taken as "Service patients" irrespective of former attacks of insanity, any history of heredity or mental deficiency, or any form of insanity due to syphilis contracted years before the war. We feel it is only fair to the genuine cases that that form of sharp practice which pushes the frankly unfit into the Army for ulterior motives should be exposed, where technical acceptance is due to the holding back of material facts and where the patient's actual service with the colours is numbered by days or even hours. We cannot see that any particular hardship would arise were these cases to be dealt with in the usual routine way of civilian practice. However, we cordially agree with Dr GEMMEL that only good can come by clearly envisaging these various aspects of a most important question, which calls for immediate discussion with a view to practical measures of an acceptable kind, and in regard to which further pronouncement on the part of the Government will be welcome.

Annotations

"Ne quid nimis."

THE WAR EMERGENCY FUND OF THE ROYAL MEDICAL BENEVOLENT FUND

THE aims of the War Emergency Fund of the Royal Medical Benevolent Fund were more precisely defined at their conference last week with members of the medical profession in general. As we have already noted, the chairman described it as a civilian fund to be managed by civilian doctors and with the principal object of assisting men on laying down their medical commissions to rehabilitate themselves in practice. Including the result of the recent appeal, a sum of £7000 is now in hand but the immediate objective is a sum of no less than £25,000, with a probability of finding even this insufficient if only 3 to 4 per cent of the medical men holding commissions prove to need help. It cannot be too strongly emphasised that the War Emergency Fund begins where other funds leave off and that no question of competition or overlapping arises. Proof of this, if proof were necessary, is afforded by the fact that the heads of the Medical Services of both Navy and Army accompanied their regrets for absence at the conference with good wishes for the success of the Fund. Important details of administration rather than questions of principle occupied the main attention of the meeting. Several of those present urged that the Fund should be administered as a loan to be repaid at leisure, and this view gained acceptance in the form "Take this to start you on your legs again, you can return it whenever you like, with or without interest as you please." Decentralisation for the collection of funds was a second point which met with general approval, a speaker stating that a personal appeal through an enthusiastic local leader, however unknown in wider circles, would attain a better response in any district than circulars from headquarters. The value of the help of Local Medical War Committees in making recommendations arising out of their local knowledge was recognised, while keeping steadily in view the necessity for absolute secrecy. The plan for ensuring this secrecy is the investigation of the case of any applicant by a single officer of the Fund, who places the name on a register accessible only to the executive, the application being dealt with in future as a number only. As on previous occasions, the conference wished it to be made abundantly clear that no question of charity must arise in accepting help from the Fund. Of the 12,000 or more medical men who have received commissions some have undoubtedly improved their financial position, while others, for the most part young men in process of building up practices, have suffered to a serious extent. The War Emergency Fund may well be regarded as a pool from which to equalise the war sacrifice made by the medical profession as a whole in so far as money can redeem the loss. The Fund appeals, in the first instance, to the more prosperous in our own profession, and then to a larger public which recognises its obligation to medical science and skill during the war. Such, in brief, was the message of the meeting, and while the Executive Committee of the Fund remains the same for the time being, a large General Committee of supporters was elected to uphold them in their work.

are handicapped And yet another factor tells in favour of the disease on which insufficient emphasis has yet been laid—viz , the restriction on ventilation caused by the Home Office lighting regulations More than 12 months ago Dr S Davies, of Woolwich, attributed the increased incidence of tuberculosis and other respiratory diseases in Woolwich to this cause The habit of the fresh air life, an essential part of the tuberculosis campaign which was just beginning to take hold of the nation as a whole, has received an incalculable setback by the insistence on closely screening windows But there is in all this no cause for depression The mechanism of tuberculosis control is good and only requires to be properly applied The work of the tuberculosis dispensaries of our great cities and such an organised system of control as that under the direction of the Chair of Tuberculosis at Edinburgh are on the right lines Sir Arthur Newsholme is most helpful when he points out the defects of these efforts and their appropriate remedies On the side of the patient the harm comes from delay in applying for treatment until the disease is fully established and his unwillingness even then to accept sanatorium treatment neglect and concealment are still potent factors On the side of the practitioner is the difficulty nowadays of devoting the time necessary for early diagnosis, and a certain unwillingness to refer doubtful cases for consultation to the tuberculosis officer Against the work of the tuberculosis officer is the insufficient staff available for the new service, and the number of experienced assistants is now reduced almost to a vanishing quantity by the war No serious progress can be made without close coöperation between these three essential links in the chain of administrative control—the patient, his doctor, and the tuberculosis officer In certain places where the coöperation has been complete the success of dispensary treatment has been such that undue emphasis has been laid on such minor adjuvants as the administration of certain remedies With the return to normal conditions after the war, with the more complete training of the tuberculosis officer, and greater coöperation with the general practitioner, the administrative control of tuberculosis will come into its own

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The Problem of the Insane Sailor and Soldier

Of the various after the war problems already beginning to attract public and professional attention that of the future of Service men who have become insane or otherwise mentally afflicted is not one of the least important It may be taken for granted, in general terms, that the Government and the country desire that all who have broken down while wearing the King's uniform should be treated justly and even generously For there is a feeling that in dealing with those who have suffered most, and who are unable to do anything further for themselves, any error that is made should be on the side of generosity To those acquainted with the handling of the nervous and mental wreckage of warfare on land or sea the inadequacy of the accommodation at present provided has long been noticeable Certain institutions admitting mental cases from a command of wide limits have been more or less crowded out Nor are the numbers of such cases likely to diminish for some time yet Further, a large number, the approximate percentage of which it is at present impossible to gauge, will pass into the category of the chronic or the incurable

From a letter which we publish in another column it will be gathered that the official suggestions, accepted by the Board of Control, for the disposal of such cases are already meeting with criticism It will be seen that the Government propose to provide the required accommodation in the ordinary civilian pauper asylums, with an allowance of 3s 9d above the pauper maintenance rate A mild attempt at further distinction from the pauper insane is to be effected by resort to the term "Service patients", and by a recent order every military case is regarded as a private patient, to be paid for by the Ministry of Pensions until his status has been determined We do not know whether in such institutions the "Service patients" are to be kept in separate blocks or not, although we cannot suppose, as Dr J F Gemmel seems to hint, that they may not be segregated even from the criminal insane One of the objections to such suggested treatment is undoubtedly associated with the fact that in the lay mind there is a stigma attached to insanity and asylums The persistence with which this keeps cropping up is such that it cannot be dismissed airily from consideration, absurd though it may be and is The public have not yet learned that mental disease is nervous disease, or that mental symptoms may be the outcome of pathological processes in the brain whose occurrence elsewhere, say in the liver, would never be regarded with distress or spoken of with bated breath It is a commonplace of practice that the average family will do anything to avoid the certification of the insane relative, and Dr Gemmel appears to welcome the possibility of saving the "Service patient" from "at least documentary evidence of insanity," though he would, of course, admit this can make no difference to the medical facts of the case While, however, the public is not yet educated to regard insanity through the spectacles of the physician, the question of avoiding certification as far as practicable is not to be ignored, especially as the sentimental side of the matter also demands consideration By this we mean that there is something repellent in the idea that some of the men who have fought for us should as a consequence spend the rest of their lives in a lunatic asylum Elaborate schemes are on foot to provide homes and blocks of residences for disabled Service men where they may spend their days by themselves in comparative comfort, hundreds, of another class, will be adequately cared for in such places as the new Star and Garter home, yet the only difference between these men and the unfortunate traumatic insane is, it may be said with reason, that the latter has been shot in the head and the former has been shot in some other part Is this a sufficient justification for making their futures so different? We scarcely think so We are bound to give due weight to the sentimental aspect of the problem, though not at the expense of abandoning our professional view that any measures calculated to enlighten public opinion on the unreality of the insane stigma should be patiently emphasised

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LOCAL ARGYRIA DUE TO ORGANIC SILVER COMPOUNDS

THE generalised argyria following the prolonged administration of silver nitrate is well known, and so is the local argyria which follows its local use and also occurs in silver workers But the local argyria due to the local use of argyrol and other organic silver compounds is a recent observation In the *Journal of the American Medical Association* Dr G M Olson has reported the following case —

A woman came under observation in November, 1916 Four years previously she sustained fracture of the nose with laceration of the soft parts extending to the right lower eyelid Argyrol was dropped into the eye, and made its way into the lacerated tissue of the lid, nose, and cheek An unsightly bluish green and slate grey pigmentation resulted for which the oculists were consulted Bichloride of mercury injections were given and, according to the patient, effected a slight improvement For two years the condition had been stationary Dr Olson prescribed hexamine, 5 grains thrice daily The condition improved at once, and in two weeks half the area of pigmentation had disappeared The dose was increased to 10 grains and the improvement continued, but was not so marked After six weeks the drug proved irritating to the stomach and kidneys and was discontinued About three fourths of the pigmentation had disappeared

The hexamine treatment was discovered by an American practitioner, A M Crispin, who published in 1914 a case of universal argyria due to collargol He gave the patient hexamine for a cold and was astonished to find that the pigmentation became several degrees lighter Another American, Davidson, reported in 1916 a case of general argyria due to urethral injections of argyrol and protargol The pigmentation following the application of the organic silver compounds comes on very slowly, but when subcutaneous injections are made the cutis and subcutis are stained at once, and if the skin is thin, as in the eyelids, a bluish green discolouration immediately becomes apparent The danger of argyria is not great, provided certain precautions are taken Intact epidermis and mucous membranes do not take up the silver stain unless solutions are used steadily for a long time But raw surfaces, such as ulcer of the cornea and burns, from which epithelium is absent, readily take up the stain In chronic inflammation the epithelium of the mucous membranes also takes up the stain more readily There is special danger in forcibly injecting the lacrymal duct urethra, and similar places, as the solution may be forced into the loose connective tissue Solutions should never be used near lacerated wounds, and patients should not be allowed to use them unsupervised for long periods The prognosis of general argyria due to internal administration of silver nitrate, in which there is a large amount of silver in the tissues, is almost hopeless But in local argyria, due to organic silver compounds, the amount of silver present is small, and in some patients the pigmentation disappears spontaneously Even in occupational argyria, due to metallic silver, the pigmentation occasionally fades spontaneously Treatment has not proved of much service, the principal remedy has been potassium or sodium iodide given by the mouth Dr Olson considers that the hexamine treatment is promising, but so far it has been tried in only two cases He suggests that it acts by forming a soluble compound with the pigment which is absorbed and probably excreted by the kidneys Under the treatment the stain should diminish in two weeks But as it fades slowly the treatment should be continued for months, with intervals, so as to avoid irritation of the stomach and kidneys

ROYAL SOCIETY OF MEDICINE

THE Royal Society of Medicine has just issued the calendar for 1917-18, which contains much interesting information on the origin, progress, and work of the society, with a complete list of officers, members of Council, sections, and dates of meetings With Sir Rickman Godlee as President (the Past President being Sir Frederick Taylor), the Council has the following list of Vice Presidents who are also Presidents of sections Mr G Rowell (Anæsthetics), Dr Preston King (Balneology and Climatology), Dr H Morley Fletcher (Diseases in Children), Dr H. D Rolleston (Clinical), Dr J Galloway (Dermatology), Dr G Harrison Orton (Electro Therapeutics), Dr G S Buchanan (Epidemiology), Dr Raymond Crawfurd (History of Medicine), Dr A Brown Kelly (Laryngology), Dr A E Garrod, F R S (Medicine), Dr R P Smith (Neurology), Dr G F Blacker (Obstetrics and Gynæcology), Mr J H Badcock (Odontology), Mr W Lang (Ophthalmology), Dr H J Banks Davis (Otology), Dr W Bulloch, F R S (Pathology), Dr R P Smith (Psychiatry), Sir Anthony A Bowlby (Surgery), and Dr W Hale White (Therapeutics and Pharmacology) Dr W Pasteur and Mr H S Pendlebury are the honorary treasurers, Dr Norman Moore and Mr W G Spencer the honorary librarians, and Mr C H Fagge and Dr J C Briscoe the honorary secretaries The secretary, consulting librarian, and editor of the society's proceedings is Mr J Y W MacAlister, into whose energetic dispensation of business no sign of this multiple pressure of work has intruded

OUR DAILY SUGAR

A SERIES of questions and answers published recently in the *Local Government Chronicle* not only illustrate the difficulties which will beset some members of the public in obtaining their authorised portion of sugar in the coming year but serve to remind us also that the work of the Government department responsible for the nation's first experiment in compulsory rationing has been, and will be, no sinecure The questions are, of course, those propounded by readers of the periodical containing them, and a considerable portion of them relate to persons who change their residence frequently, in some cases at every week end, by "going home" or by leaving their homes for change of air Arrangements, it is stated, are being made for those who thus remove from one registered household to another and for others who, having no fixed address, cater for themselves and are constantly travelling They will have to form a code of a comprehensive and ingenious character if they combine to satisfy the requirements of the chronic week ender, of the bachelor and spinster entering the bonds of matrimony after registration, of a mobile anti aircraft unit, and of "a person who has no fixed abode and lives first with one friend and then with another," all of whom are anxious to know what the future may hold in store for them We can conceive the last mentioned nomad being made comparatively welcome in the hospitable circle in which he moves if he were to promise before arriving at each temporary abode that he would contribute his ration to the family stock for general cooking purposes, and abstain from drinking it in tea, coffee, and other beverages This is a form of economy in sugar which hardly seems to be enough impressed upon the public by their many advisers in the newspapers and elsewhere. And yet a large number of persons by choice drink no sugar in their tea, and some, perhaps fewer, omit it from coffee also Many, too, have voluntarily forgone it as a form of "war economy,' and we have not yet heard that either class believes that it has suffered in health thereby, as many believe that they have done through eating "war bread' The temporary shortage of tea with which we appear to be threatened will cause far more inconvenience to all than voluntary abstinence from sugar in it, but may have an indirect advantage through compelling an economy in the latter which many housekeepers will welcome. In respect of sugar, however, and of tea alike, we urge upon all cheerful acquiescence in deprivations which are temporary only and are inevitable Our population suffer in a country which flourished and grew strong long before either tea or sugar was in general use, and which only in a very recent period of its existence has adopted the former as a national beverage

EPIDEMIC POLIOMYELITIS

THE central facts in the bacteriology of poliomyelitis have not seriously been called in question, though the claims of certain streptococci to be regarded as the specific cause of the disease have been urged with some insistence by several investigators These streptococci are frequently found in the central nervous tissues in cases of the disease as seen in man or as artificially produced in monkeys Recent work seems to show that these organisms must be regarded as *secondary infections* since they are unable to produce the lesions of poliomyelitis or to protect against infection by the filtrable virus of that disease, nor do they differ from streptococci isolated from cases of sepsis Interesting researches on the delicacy of the relation which exists between infection and alterations in the meninges and choroid plexus have been recorded by Flexner and Amoss The slight alteration which is caused by lumbar puncture and the injection of such physiological fluids as monkey or horse serum, isotonic salt solution, Ringer's and Locke's solutions, promotes infection with the virus of poliomyelitis which has been introduced into the blood or subcutaneous tissues or swabbed on the nasal mucous membrane Even so minute a disturbance as the substitution of the cerebro spinal fluid of one monkey for that of another may, in some instances, promote infection as does also simple lumbar puncture if attended with the slightest hæmorrhage The same observers found that the intrathecal injection of normal horse serum in protected monkeys caused the passage of protective substances from the blood of the injected animal into the cerebro spinal fluid. There are still many lacunæ in our knowledge of the spread of epidemic poliomyelitis, but some light is thrown upon the irregularities by the discovery that a material is present in the nasal and pharyngeal mucosa of man which can inactivate or neutralise the active virus, and that this power is not found in all cases or at all times in the same individual The poliomyelitic virus has been shown by Flexner to survive in glycerol for at least six years Though much work has been done on the part played by insects in the epidemiology of the disease the evidence as to their importance is still of the slightest

NUTRITIVE VALUE OF BUTTER SUBSTITUTES

AN important point in connexion with the comparative dietetic values of butter and butter substitutes is raised in an interesting paper on the subject appearing in the September number of the *Journal of Physiology* by W D Halliburton and J C Drummond For the purposes of the investigation the butter substitutes were divided broadly into three classes as follows (1) Animal fat margarines (the higher priced margarines), (2) vegetable oil margarines (the cheaper forms of margarine), and (3) nut butter, a class of product forming a comparatively insignificant fraction of the butter substitutes consumed in this country, and which the authors state is prepared exclusively for the use of vegetarians and consequently has a limited sale The experiments were made on rats, but the belief is expressed that the results have a direct bearing upon the dietary of the growing child This belief is, of course, well founded, since experiments on rats have been fruitful in indicating particularly the importance of the presence of accessory growth substances in the dietary As the net result of their investigations the authors conclude that (1) the fat soluble accessory growth substance (vitamine) is present in beef fat and "oleo oil," and is present in margarines prepared upon such a basis Such margarines, the authors consider, are nutritively the equivalent of butter (2) Coconut oil, cotton-seed oil, arachis oil, and hydrogenated vegetable oils contain little or none of this accessory substance, and hence margarines prepared with a basis of these fats have not an equal nutritive value to that of butter (3) Nut butters prepared from crushed nuts and vegetable fats are similarly not equal to butter, while (4) lard substitutes prepared from vegetable oils are equal to lard in their nutritive value, but both alike are destitute of the fat soluble accessory substance. In a well balanced diet the deficiencies pointed out may not be a serious matter, as so many articles of food carry accessory substances, and so a compensation is obtained Curiously enough, this compensation is found in the present war bread as was pointed out in our columns last week Thus while the Government regulation bread contains less starch than wheat flour it is decidedly richer in every other constituent, and particularly in regard to accessory growth substances and phosphorus The importance of a balanced diet is again emphasised in an admirable pamphlet on 'Food and How to Save It" by Dr Edmund I Spriggs, published last week by His Majesty's Stationery Office This consists of a series of articles already issued by the Ministry of Food, which are written in such simple terms as to afford a valuable and instructive guide to the general public The fact however, that some of the fats available to the public are deficient in certain essentials should be carefully considered, as doubtless amongst the poor the fat dietary is largely based on cheap vegetable oils As Professor Halliburton and his co worker Mr J C Drummond, point out, it would be truer economy even for the poor to purchase smaller quantities of an oleo oil margarine if they cannot afford the luxury of real butter But we should like to ask, Are vitamines so difficult to prepare as to exclude the practicability of adding them to accessory free fats, so making up for the deficiency? This question might well receive the careful attention of our food authorities as well as the manufacturers of inactive butter substitutes

ICTEROGENETIC SPIROCHÆTOSIS

Professor Umberto Carpi[1] has had opportunity for investigating over 300 cases of epidemic jaundice occurring in two base hospitals during 1916 from the Isonzo sector The epidemic, which made its appearance with a few sporadic cases at the end of 1915 and reached a high figure in the following January, died out from March to June, and attained its maximum intensity from August to December, 1916 There was a strict parallel between the epidemic of camp jaundice and sporadic cases among the troops in garrison Several interesting facts in Professor Carpi's observations deserve notice He found that the period of incubation was usually 15–20 days, and in some cases 25–30 days or longer, and the question arises whether the disease may not have a still longer incubation period or whether cases of this kind are the result of infection in hospital He found that inoculation of the virus in a guinea pig could give rise to a latent infection capable of manifesting itself only after a long period, in one instance as much as 131 days, and he therefore inclines to the view that in man also there may be a long period of incubation and latency of the infection, and that many of the cases arising sporadically may represent the active phase of an infection contracted some time previously at the original infective focus and slowly developed A further interesting point is the result of the blood examination in Professor Carpi's cases In the initial period of the disease there was a polynuclear leucocytosis and in some severe cases myelocytosis with erythroblasts In the later stages the polynucleosis gave way to lymphocytosis with eosinophilia These peculiarities may afford a differential diagnosis between spirochætic jaundice and certain forms of typhoid and paratyphoid infection which are characterised by leucopenia with lymphocytosis Serological investigations from the point of view of the differential diagnosis between spirochætal and typhoid or paratyphoid infections also afforded results worthy of mention Out of 112 cases it was found that a positive agglutination with typhoid and paratyphoid A was very rare, but somewhat less so with paratyphoid B These results in individuals recently vaccinated do not lend much support to the theory of Frugoni, which attributes the greater part of cases of epidemic camp jaundice to paratyphoid infection None of the cases under observation showed any clinical affinity with either typhoid or paratyphoid Good therapeutic results were obtained by the administration of mixed mercurial and arsenical preparations, as evidenced by the prompt diminution of jaundice, lymphatic gland enlargement, and tumefaction of liver and spleen Even during the febrile period no harmful results ensued from their administration, neither was albuminuria unfavourably affected

As we go to press the Conference of Representatives of Local Medical and Panel Committees has begun its deliberations in regard to the important matters at issue between insurance practitioners and insurance committees

AT its meeting on Monday last the National Council for Combating Venereal Diseases ratified the resolution of its Executive Committee to refrain from recommending artificial prophylaxis

THE CONTROL OF VENEREAL DISEASES

SOME PRACTICAL POINTS IN INTRAVENOUS MEDICATION

WITH SPECIAL REFERENCE TO THE INJECTION OF ARSENOBENZOL PREPARATIONS

BY H W ABBOTT, M.R C S ENG , L R C P LOND

THE treatment of syphilis by the intravenous injection of salvarsan or one of its substitutes is becoming daily of more and more frequent occurrence, and, most probably, in the near future, will be the one recognised method of combating this disease In the vast majority of cases the sufferer applies to the general practitioner for advice and thus it will inevitably become necessary for him to gain proficiency in intravenous medication in order to be able to give his patients the benefit of this, the latest, and probably the best, means of treatment

The operation, though requiring a certain amount of skill, should not be beyond the ability of anyone who cares to give a little time and thought to learning its technique, and it is with the hope of smoothing away any difficulties which may have been encountered that I have ventured to write this paper It is in no wise intended for the specialist, but for that large branch of our profession, the men in general practice, many of whom have probably not had the opportunity of attending any of the post-graduate courses on venereal disease Much of the subject matter of this article has been obtained from personal observation and experience, but a certain amount is based upon, and follows, the teaching of Lieutenant-Colonel L W Harrison and Mr (late Captain) C H Mills, of the Military Hospital, Rochester row, London, S W , to whom my indebtedness is gladly acknowledged

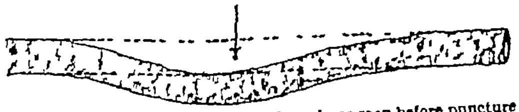
There are several methods employed in passing a needle into the lumen of a vein, but in the present paper I shall confine myself to describing one which is very frequently adopted and which is perhaps, on the whole, the best. Certain preliminary conditions are, however, common to all methods, and much of the success of the operation depends upon the precise fulfilment of these precedent requirements Thus, the patient must be properly prepared, he must be placed in a definite position with regard to the source of light, the skin must be fixed near the site of the injection, &c

Preliminary Considerations

First, then it will be as well to consider these preliminary conditions upon which success so much depends

(*a*) *Preparation of the patient* —This should be very similar to that required for an anæsthetic The patient ought to have fasted for at least six hours previous to the intravenous injection otherwise there is a great liability of his vomiting during or immediately after the operation A smart saline purge is to be given on the previous day, and he should be instructed to avoid drinking much fluid during the 12 hours immediately preceding the injection and to abstain altogether from taking liquids for the last six hours Thus the tissues have lost a good deal of moisture, they are physiologically "thirsty," and simply "mop up" the arsenic from the blood stream after it is injected much to the detriment of the health of the *Spirochæta pallida* the micro organism which causes syphilis

FIG 1



The dotted line shows the course of the vein as seen before puncture of the skin The arrow indicates point of the needle in the overlying skin. The firm line illustrates the displacement of the vein caused by the thrust of the needle though the unfixed skin

(*b*) *Fixing of the skin* —Fixation of the skin, the essential feature of which is that it immobilises the subcutaneous vein, is one of the most necessary factors of success If this be not done the thrust of the needle as it traverses the skin will most probably displace the vein laterally and longitudinally—i e it will produce a kink in it (Fig 1) I need hardly remind the reader that it is extremely difficult to place the bevel of a needle within the lumen of a kinked vein The skin is fixed by pressure exerted on its surface It is convenient to use for this purpose the second and ring fingers, slightly separated, of the left hand, but any digit will serve the thumb in certain positions being extremely useful The pressure should be exerted at a spot about 3 inches nearer to the hand than the site of the puncture, this leaves sufficient room in which to work In fixing the skin, do not drag the vein towards either side but just pull the skin slightly down towards the hand, exactly in the same direction as the course of the vein The integument is thus put gently on the stretch but enough force must not be used to obliterate the lumen of the vein. Now press the skin upon the subcutaneous tissues sufficiently firmly to counteract the thrust of the needle

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[1] Il Policlinico Practical Section, July 29th 1917

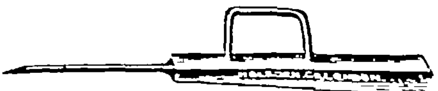
(c) *Position of the patient* —Until fairly recently it was considered necessary for the patient to lie down during an intravenous injection of salvarsan or one of its substitutes, and this recumbent position was maintained for some 24 hours subsequently It has been shown, however at the Military Hospital, Rochester row, that such procedure is an unnecessary precaution. Many hundreds of injections have now been given while the patients have been seated in a chair Moreover, at the conclusion of the operation they have been free from restraint, neither has there been the slightest cause for anxiety arising therefrom In private practice the fact that our patient can be sent away immediately after the operation is completed very much simplifies the matter Let the patient therefore sit on a chair placed alongside a narrow table about 3 feet wide and of a convenient height He is thus sitting sideways close to the table, over which a couple of sterilised towels are placed, and upon these the patient lays his arm It will be seen that, by reversing the position of the chair, either arm can be used for the injection There should be ample light coming towards the surgeon To ensure this the table is placed near a window and the chair will be along that side which is nearer the source of illumination Make the patient lean well back in his chair and a flood of light will stream along the arm showing up, like thick cords, the prominent distended veins

(d) *The tourniquet* —The arm having been bared a length of rubber tubing of 18 inches is applied above the elbow as a tourniquet a piece of lint first being placed round the arm to take the immediate pressure of the tubing Put the rubber on the stretch as it is used and make it tight enough to constrict the veins but not to obliterate the radial pulse Commence by placing the middle of the tourniquet behind the upper arm. Bring the two ends to the front looping one end under the other to keep the tourniquet in position The loop is easier to undo than a knot simply requiring to be pulled. Now instruct the patient tightly to clench his fist If in doing this there is a tendency to flex the forearm put a roller bandage under the back of the wrist and press the fist down over this so as to keep the arm straight

(e) *Position of the surgeon* —When passing a needle into the interior of a vein one can often see the course of the vessel better by looking somewhat horizontally along the arm rather than vertically over the top In this way the course of the veins appears very like the metals of a railroad when looking along its track. The position the operator assumes is somewhat like that which a billiard player adopts when making a shot "

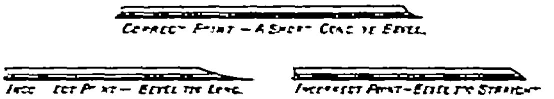
(f) *The needle.*—The best method of holding the needle is to grasp its shoulder between the thumb and first finger of the right hand if an ordinary instrument, say a Weintraud or a Record be employed A much more sensitive touch can be obtained by this method than by holding the instrument in any other way The writer however always uses a needle made for him by the Holborn Surgical Instrument Company, Limited, of Thavies-inn London, E C It has a handle placed on the upper surface of its mount and over the centre of gravity of the instrument, thus giving a perfect sense of balance In practice it is held by its handle when it will be found that the "grip' so obtained imparts to the instrument a greater delicacy of touch than has hitherto been possible and the surgeon can, with the utmost ease give to the point of the needle every gradation of movement which may become necessary in order to ensure its entry into a vein (Fig 2.) The bevel of the needle used for its intravenous injection should not be as long as that of a needle ordinarily used for serum work because it is necessary that the whole of the bevel be in the vein If however the bevel be very long there is the possibility of its being partly within and partly without the blood stream Another point to note is that the bevel ough not to be ground straight but should be concave because this shaped edge more easily picks up the vein wall See Fig 3)

FIG 2.



(g) *The site of the injection* —In the writer's opinion the best vein to select for the injection is the radial, and at a point some three inches below its junction with the median cephalic. Here the radial vein lies over a convexity so that the operator is not working in a hollow, which is frequently the case, especially in fat arms, when one of the veins at the bend of the elbow is selected Further, the radial is one of the most immobile veins in the arm It is also straight and fairly long In selecting a vein it is not wise to choose one of the largest, because a clot sometimes forms after the injection and it is as well not to risk a clot in one of the main channels Again, if a vein of medium size is chosen, we still have the larger ones to fall back upon if we fail successfully to pass the needle into the first vein Before passing the instrument make quite certain, by rolling the selected vessel between the finger and the subcutaneous tissue that there is not a thrombus from a previous injection. If there should be one then select another vein. Clean the needle well before using it, or you may leave a black puncture mark, caused by oxide of iron, which is irremovable

FIG 3.

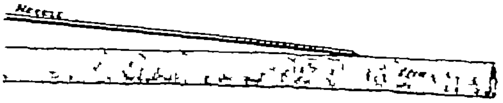

Correct Point — A Short Concave Bevel.
Incorrect Point — Bevel Too Long.
Incorrect Point — Bevel Too Straight.

(h) *Methods of producing venous turgescence* —Sometimes the veins of the arm, notwithstanding the application of the tourniquet, do not stand out so prominently as desired and, in order to achieve this most helpful condition the surgeon may employ any or all of the following methods —1. Hang the arm down for a couple of minutes, at the end of which time apply the tourniquet while the arm is still dependent 2. Subsequent to the application of the tourniquet swing the arm round like a windmill for a dozen times 3. After the tourniquet has been applied, make your patient clench and unclench his fist several times 4 Give the arm half a-dozen really sharp slaps—enough to redden the surface This manœuvre frequently causes the veins to become tense with blood, probably through reflex stimulation 5 Massage the arm from the wrist to the elbow To do this, separate widely the thumb from the rest of the hand, and apply the concavity thus formed to the convexity of the surface of the arm Then rub firmly upwards towards the elbow for half a dozen times The operator will be surprised at the result unless he have already practised this movement 6 Soak the hand and arm in water as hot as can be borne for ten minutes Then apply the tourniquet The limb can be conveniently soaked in hot water by means of an enamelled pail

Insertion of the Needle

Having thus disposed of the preliminary considerations, we now come to the actual injection of the drug The skin having been fixed hold the needle very nearly flat—i e very nearly parallel with the plane of the skin, and likewise in the direction of the vein and immediately over its crown,' by which of course is meant the centre or highest point of its track. With one movement pass the needle bevel upwards, through the whole thickness of the skin and proceed onwards subcutaneously for half an inch

FIG 4



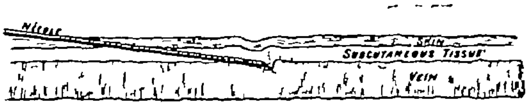
It has been stated by some authorities that the "eye" or bevel of the needle should be downwards—i e., towards the vein but you will find that the needle is much more easily passed through the skin, and it picks up the outer wall of the vessel much more readily when its bevel is turned upwards away from the vein Indeed the bevel of the needle is very like the edge of a carpenter's plane, and should be directed similarly towards any object it is intended to cut (See Fig 4) The point of the needle is now in the subcutaneous tissue between the skin above and the vein below and lies immediately over the vein. At this stage it is very important to define the position of that portion of the needle which is under the skin Without knowing this the inexperienced operator is very liable blindly to plunge about in the subcutaneous tissues, often traversing the vessel, and in any case failing to get the bevel of the instrument into the venous blood stream In order to determine the position of that portion of the needle lying subcutaneously lift the needle bodily up away from the deeper structures towards the surface of the skin and depress the shoulder slightly This movement reveals the exact situation of the whole of that portion of the needle under the skin, because, in bodily lifting the instrument up, you have stretched the skin tightly over it, and thus its position is accurately marked

Now look for the vein and note its course with your eye or feel it with your left hand If by any chance the point of the needle be not lying over the centre of the vein, alter subcutaneously the position of the instrument so that the point does occupy this situation relative to the vein Refix the skin if you have released your hold in order to search for the vein Then simply depress the point of the needle sufficiently to engage the wall of the vessel, but not enough to traverse it, and push gently and steadily along the course of the vessel, the needle *must* pick up the vein, and as you proceed you will feel a sudden "give" in the resistance, a sudden relaxing of the tissues as the needle enters the vessel, and on looking at the end blood will be seen to be flowing Sometimes a distinct "click" is heard as the needle pierces the vessel wall It often takes, however, an appreciable time, something like two or three seconds, for the pressure in the vein to force the blood backwards through the narrow lumen of the needle and flow out at the other end Therefore, do not be in too great a hurry to decide that the bevel of the needle is not within the interior of the vessel

Another phenomenon which will be noticed is the formation of a dimple in the skin, a little distance behind the point of the needle This occurs at the instant when the needle first impinges upon the vessel wall and the mechanism of its production is as follows When the needle, as it is gently pushed onwards, first reaches the vein it does not immediately pierce it, because the actual tip of the needle is really the apex of a triangle, the sides of which are formed by the bevel Now these sides, diverging from the apex, offer a certain amount of resistance to the passage through the coats of the vein Thus the first result of the impact of the needle against the vessel wall is to push it onwards The vein is, however, connected to the skin by the subcutaneous tissue, and as the vessel is pushed in front of the needle it drags the skin after it Finally, however, the needle pierces the coats of the vein, the vessel slips back, the tension between itself and the skin is released, and the dimple disappears The formation of this dimple in a good "rallying point" in the operation of intravenous medication It does not always occur, especially if one is using a fine needle with a very sharp point or if the instrument is thrust into the vein by 'stabbing" at it There is then very little pushing of the vessel in front of the instrument

The formation of the cutaneous depression (' the dimple") *is diagrammatically illustrated in Fig 5*

FIG 5



It is often found that after the application of the tourniquet to an arm practically devoid of fat the veins present immediately beneath the integument—i e, that there is no pad of subcutaneous tissue between the vessel and the skin In such patients the operator will find that as soon as he has passed the bevel of the needle fairly through the whole thickness of the skin the instrument is already within the venous blood stream, the skin and the closely applied vessel having been punctured practically at one and the same time

As soon as the blood is definitely and continuously flowing from the end of the needle the tourniquet can be removed and the instrument connected with the apparatus which the practitioner is using for the injection of the drug

The one certain indication that the bevel of the needle is within the lumen of the vein is blood issuing from the end of the instrument In order to prevent contact with the patient's skin I have found it useful to place a piece of lint soaked in 1 in 1000 hyd et potassii iodidi over the arm at an appropriate distance from the puncture, which thus absorbs the extravasated blood If there be no blood escaping from the base of the needle, then its bevel is not within the lumen of the vein unless of course the instrument be not patent This loss of patency occasionally occurs through a tiny mass of subcutaneous tissue intimately mixed with blood clot plugging the vessel, which condition is sometimes brought about by repeated unsuccessful attempts to pass the needle into the vein If this sequence of events has happened the surgeon will often notice that, although blood be not issuing from the base of the needle, yet it is leaking a little along the track of the instrument, and appearing at the site of the skin puncture, there is thus a great probability of the bevel of a blocked needle having been passed into the venous blood stream It is better in such a case to try venipuncture at another spot Do not withdraw the first needle until the second has been successfully passed, because, when left *in situ*, the needle acts as a plug for the previous puncture in the vessel wall and prevents, to a large extent, extravasation into the surrounding tissues during turgescence of the vein. To obviate any blocking of the needle by other material it is wise always to keep a wire stylet in the instrument when not actually in use

Sometimes, however, blood begins to issue from the base of the needle, proving that the bevel is within the vein but the flow will cease almost as soon as it has begun This phenomenon indicates that the needle has completely transfixed the vein, and consequently that the bevel is now lying in the tissues beyond the distal portion of the vessel wall If this happens it is only possible for blood to flow from the end of the needle during the time that its bevel is passing across the blood stream, as soon as it is beyond the flow stops It is a sign of faulty technique, the instrument having been held at too great an angle with the plane of the skin It can scarcely be too strongly impressed upon the operator who is commencing intravenous medication that the needle should be passed, at all events, through the skin very nearly parallel with its surface If this accident has befallen the operator the instrument should be slowly withdrawn until you find that a position is reached when blood re commences to flow Then you will know that the bevel has been withdrawn from the tissues beyond, and is again within the interior of the vein Should, however, a clot have been formed meanwhile in the stem of the needle, blood will not flow until the obstruction has been removed, the method for doing which is described later in the article.

Injection of the Drug

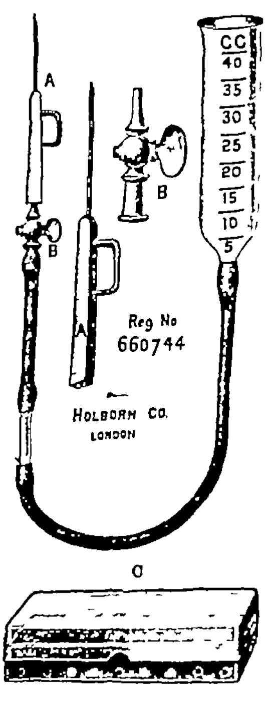
Salvarsan or one of its substitutes may be introduced intravenously either (1) by pumping it into a vein (2) by the action of gravity

Gravity is the better method, because if the needle is not in the vein the solution will not flow at all events but very slightly, whereas one can always force, by means of a syringe or a pumping apparatus, fluid into the subcutaneous tissues At first sight it would seem that if the operator were forcing the solution into the tissues and not into the vein it would be quite easy to recognise the swelling so caused However, many a good operator has failed to do so, especially in a thick arm, and where the point of the needle is deep, and on the far side of the vein Moreover, gravity apparatus is simpler, all that is required being a funnel, a length of rubber tubing with a glass "window" and a tap

After a trial of both methods the writer has now come to use exclusively the gravity apparatus, the only drawback to the use of which very simple contrivance is that an assistant is needed

For the average general practitioner who is, of course, not giving intravenous injections every day the '914' preparations—viz, neo salvarsan, novarsenobillon, neo kharsivan &c—are preferable to the "606 preparations, because salvarsan and its substitutes have to be rendered alkaline before they can be used, whereas the others are sent out already alkalinised moreover as they are extremely soluble in water there is absolutely no technique required in order to form an alkaline solution All one has to do is to empty the contents of an ampoule of, say, novarsenobillon into a vessel containing distilled water, solution takes place immediately and the drug is ready for injection

FIG 6



Salvarsan has not given me any better results than novarsenobillon and for many months now I have exclusively used this latter preparation with the happiest effects on the patients In practice it is dissolved in 20 c c of distilled water, with which it forms a perfectly clear yellow solution The glass funnel (Fig 6) employed is of 40 c c capacity, marked in 5 c c 's, the rubber tubing measures 40 inches complete with the window, which is situated 3 inches from the end To the extremity of the tubing is fitted a Harrison s tap (B), which makes a perfect joint with the special needle (A) I have devised, or with a Weintraud's needle This apparatus is very conveniently kept in a strong metal nickel plated box which has been specially designed by the Holborn Surgical Instrument Company, Thavies Inn, London, E C, for sterilisation by means of boiling The box is of such a size *that if one does not happen to have a* steriliser handy it can be put into an ordinary saucepan (See Fig 6, C)

If the practitioner prefers to use 606 preparations—i e, salvarsan, kharsivan, arsenobillon, &c —*then the funnel* should be of 300 c c capacity, because the best dilution of salvarsan is about 1 decigramme to 30 c c of water, hence 0·6 gramme will require 180 c c to dissolve it, otherwise the technique remains exactly similar The tubing is emptied of air by allowing saline to run through This can be very expeditiously accomplished by first lowering the funnel containing the saline until it becomes the most dependent part, then as the *funnel is gradually raised again* the fluid "chases" the air of the tubing As soon as the needle has been passed into the vein the tap is connected, turned on, and a little saline allowed to run into the vein, then the solution of novarsenobillon is poured into the funnel and the saline renewed just before the last of the solution has disappeared As soon as the surgeon sees that the fluid passing along the "window" has changed colour from yellow to white he will know that all the drug has passed into the vein and he is now only injecting saline solution If the medical practitioner is not situated near a hospital, where, of course freshly distilled water and normal saline made therefrom can be readily obtained, he will be able to get both from Messrs Allen and Hanburys, of 7, Vere street, London, W, or the Holborn Surgical Instrument Company The distilled water supplied by the former under the name of "Apyrogen" water is specially prepared as a diluent or solvent of substances for intravenous injection It is distilled in a Jena glass apparatus and is free from water toxin The distilled water or normal saline is put up in sealed amber glass tubes ("azoules") of a capacity varying from 10 c c to 250 c c, and can be kept for an indefinite period The firm distil nearly every day, so that fresh solutions can always be obtained, but I have used distilled water and normal saline of their manufacture over three months old for intravenous medication without the slightest febrile reaction, although the temperature was taken morning and night for one week after the operation These ampoules of distilled water, normal saline, &c, are kept in stock by the Holborn Surgical Instrument Company

While the injection is being given it occasionally happens that the flow ceases This may be due to either of the following causes 1 The eye of the needle may be pressing against some part of the vein wall, the remedy for which is to revolve the needle 2 A clot may have formed in the lumen of the needle To remove this obstruction disconnect the needle from the apparatus Constrict the venous circulation, pass a stylet *down the lumen of the* needle so as to loosen the clot, when the venous pressure set up by constricting the veins will drive the clot out of the needle, and the operation may be resumed 3 The bevel of the needle may be out of the vein This can be verified by a manœuvre similar to that used under heading 2 If after constricting the venous circulation and clearing the lumen of the needle no blood issues from the end of the instrument, then the eye is not in the *lumen of a vein*, and a fresh puncture had better be made, unless by moving the needle backwards or forwards one can replace the bevel of the instrument within the blood stream, as is evidenced by the blood flow After the injection is completed the patient has a pad of sterilised lint placed over the puncture, the tap is turned off, the needle is withdrawn by a quick movement, and he holds his arm vertically upwards for a couple of minutes, keeping light pressure on the pad, which is then removed The site is now cleansed with a solution of 1 in 1000 hyd et potassii iodidi and painted with a solution of iodine 2 per cent in spirit, as was also done immediately preceding the puncture

Finally, a piece of rubber plaster an inch square, with a tiny piece of boracic lint in the centre to cover the actual wound, is applied, and the dressing is complete The arm should not be flexed at the elbow for one hour after the injection, so as to prevent blood being *forced from* the puncture in the vessel wall into the subcutaneous tissues

The patient is now free to go home, and should not indulge in any form of strenuous exercise for a couple of hours, indeed, it is better when he arrives home to lie down for this period

Holloway N

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION

METEOROLOGICAL OFFICE ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION SUMMARY OF REPORTS FOR THE MONTHS ENDING

April 30th, 1917

Place.	Rainfall in millimetres	Metric tons of deposit per square kilometre.								
		Insoluble matter			Soluble matter		Total solids	Included in soluble matter		
		Tar	Carbonaceous other than tar	Ash.	Loss on ignition	Ash		Sulphate as (SO_3)	Chlorine (Cl)	Ammonia (NH_3)
ENGLAND										
Leicester ..	42	0·07	4·72	8·98	1·45	1·99	17·21	1·16	0·37	0·14
London—										
Meteorological Office	44	0·10	0·64	7·47	1·58	3·17	12·96	1·45	1·03	0·13
Embankment Gardens ..	46	0·31	2·20	4·77	3·14	6·17	16·58	3·71	0·95	0·24
Finsbury Park	68	0·07	1·28	5·74	3·24	5·36	15·70	3·92	0·78	0·07
Ravenscourt Park	79	0·60	4·20	11·05	3·55	4·00	23·37	2·67	0·65	0·11
Southwark Park	43	0·09	1·08	2·76	2·85	4·99	11·76	2·94	0·91	0·10
Wandsworth Com	33	0·02	0·41	1·32	1·65	3·82	7·23	1·79	0·58	0·04
Golden Lane	46	0·05	1·98	3·34	1·12	2·60	9·09	1·45	0·59	0·12
Malvern	36	Nil	0·25	0·41	0·64	1·28	2·60	0·59	0·18	F t.
Manchester—										
Queen's Park	41	—	—	3·70	—	—	10·44	—	—	—
School of Technology	31	—	—	4·15	—	—	12·72	—	—	—
Newcastle on Tyne	81	0·65	10·75	23·70	2·90	6·23	44·23	3·12	0·63	0·09
Rochdale	66	0·27	7·20	18·02	—	—	—	—	—	—
St Helens	56	0·65	3·68	8·38	2·67	9·13	24·50	3·97	1·29	0·22
SCOTLAND										
Coatbridge ..	32	0·12	1·40	4·16	1·65	3·32	10·64	2·08	0·21	0·14
Glasgow—										
Alexandra Park.	18	0·05	1·40	3·23	0·84	2·17	7·69	1·29	0·24	0·0
Bellahouston Park	28	0·06	1·99	4·82	1·00	3·99	11·86	1·62	0·14	0·11
Blythswood sq	23	0·14	2·75	5·95	1·28	3·63	13·75	2·33	0·19	0·13
Botanic Gardens	40	0·04	1·47	3·30	1·88	4·77	11·56	2·62	0·22	0·16
Richmond Park	35	0·06	0·97	1·74	1·32	3·46	7·55	1·75	0·22	0·15
Ruchill Park ..	35	0·08	2·54	6·02	1·16	3·63	13·43	1·74	0·22	0·04
South SidePark	20	0·33	0·36	1·88	0·66	1·65	4·89	0·86	0·10	0·07
Tollcross Park ..	—	—	—	—	—	—	—	—	—	—
Victoria Park	23	0·03	0·54	1·05	1·11	2·96	5·69	1·47	0·15	0·1

May 31st 1917

Place	Rainfall in millimetres	Metric tons of deposit per square kilometre								
		Insoluble matter			Soluble matter		Total solids	Included in soluble matter		
		Tar	Carbonaceous other than tar	Ash.	Loss on ignition	Ash.		Sulphate as (SO_3)	Chlorine (Cl)	Ammonia (NH_3)
ENGLAND										
Leicester	51	0·17	3·12	9·37	1·13	2·92	16·70	1·55	0·52	0·25
London—										
Meteorological Office	62	0·14	1·11	3·12	1·24	2·48	8·09	1·30	0·44	0·18
Embankment Gardens	55	0·80	9·52	15·32	5·32	6·75	37·70	3·51	1·17	0·21
Finsbury Park	49	0·05	0·70	3·47	0·81	1·58	6·61	1·67	0·35	0·07
Ravenscourt Park	60	0·39	2·91	6·80	1·49	3·45	15·03	1·86	0·45	0·10
Southwark Park	67	0·08	5·30	16·44	5·36	9·16	36·33	5·08	1·04	0·14
Wandsworth Com	35	0·01	0·21	0·64	1·17	2·81	4·84	1·38	0·46	0·06
Golden Lane	55	0·03	2·33	8·11	1·10	3·08	14·64	1·64	0·66	0·24
Malvern ..	95	Nil	0·21	0·48	1·44	3·01	5·15	1·21	0·33	0·03
Manchester—										
Queen's Park	42	—	—	—	—	—	13·30	—	—	—
School of Technology	31	—	—	—	—	—	15·60	—	—	—
Newcastle-on Tyne	65	0·15	3·60	8·36	1·95	5·58	19·64	2·85	0·46	0·12
Rochdale	—	—	—	—	—	—	34·60	—	—	—
St. Helens ..	86	0·21	2·23	5·68	1·72	7·69	17·53	3·24	1·79	0·26
SCOTLAND										
Coatbridge	61	0·12	2·37	8·18	2·74	5·65	19·06	2·93	0·36	0·23
Glasgow—										
Alexandra Park..	65	0·25	2·91	7·89	3·76	5·87	20·18	2·59	0·14	0·39
Bellahouston Park	74	0·55	3·77	6·91	1·72	6·27	19·22	2·49	0·22	0·14
Blythswood sq	92	0·50	3·04	10·20	2·64	6·88	23·26	3·13	0·40	0·37
Botanic Gardens	100	0·70	2·51	6·62	2·92	8·45	21·20	3·38	0·11	0·36
Richmond Park.	78	0·35	2·05	12·78	2·65	5·99	23·82	2·45	0·21	0·27
Ruchill Park	87	0·29	2·16	5·91	2·43	5·74	16·53	2·22	0·26	0·17
South Side Park	70	0·09	1·06	3·67	2·11	6·25	13·20	2·35	0·18	0·14
Tollcross Park	62	0·23	1·34	5·30	2·72	6·99	16·58	3·43	0·21	0·15
Victoria Park	83	0·29	1·28	5·68	2·34	8·36	17·95	3·42	0·20	0·24

F t = Faint trace.

There were no returns from Victoria Park London station for April and May and at Tollcross Park Glasgow owing to an accident the April sample was lost.

"Tar" includes all matter insoluble in water but soluble in CS_2 "Carbonaceous" includes all combustible matter insoluble in water and in CS_2 "Insoluble ash" includes all earthy matter fuel ash &c. One metric ton per sq kilometre is equivalent to: (*a*) Approx 9 lb per acre; (*b*) 2·56 English *tons* per sq mile (*c*) one gramme per sq metre (*d*) 1/1000 millimetre of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables

THE ARMY COLLECTION OF WAR SPECIMENS

THE OPENING OF THE EXHIBITION

AN exhibition of the Army collection of war specimens was declared open on Thursday, Oct 11th, at the Museum of the Royal College of Surgeons of England by SIR ALFRED KEOGH, Director General of the Army Medical Service, who, at the same time, was presented with the *Honorary Fellowship* of the College With reference to this presentation an interesting fact is revealed by the archives of the College Many years ago Sir Alfred Keogh had actually received his number in the examination room of the College, when sitting for the Fellowship, at which point he was unexpectedly called up for foreign service, and had to discontinue the examination

The ceremony of presentation took place in the presence of a large number of leading surgeons and physicians and medical officers serving with the Navy and Army, as well as of notable civilians In a brief speech SIR GEORGE MAKINS, President of the College, recalled to the meeting Sir Alfred Keogh's distinguished services to his country as the head of the medical department of the Army in the South African War, as Rector of the Imperial College of Science and Technology, and now as Director General of the Army Medical Service in the greatest war which the world has ever known

Sir Alfred Keogh's Address

SIR ALFRED KEOGH, after acknowledging the honour that had been done to him personally, as well as to the Service which he represented, declared the exhibition open in a brief address, in which he described the stages in the movement which had resulted in an increasing and most valuable store of pathological objects As early in the history of the war as November, 1914, he said, a committee was constituted under his presidency to compile a medical history of the war, one of whose aims was to collect from casualty clearing stations and military hospitals examples of the diseases and wounds being endured by the soldiers in order that the best means might be adopted for their treatment Specimens in illustration of these diseases and wounds would constitute an original and reliable source of knowledge for all time The Army Medical College at Millbank, overworked and understaffed at the beginning of the war was not in a position to undertake the formation of such a collection as the Medical History Committee had in view, and in May, 1915, Dr Walter Morley Fletcher, secretary of that Committee, asked the assistance of the Council of the Royal College of Surgeons of England who at once placed the Museum staff and workrooms of the College at the disposal of the Army Council In January, 1916 Lieutenant-Colonel T R Elliott was placed in charge of this particular service in France, and specimens began to arrive in numbers, the willing coöperation being secured of younger pathologists attached to the clearing stations and hospitals in France—namely, Captain Herbert Henry Captain H W Kaye, Lieutenant T G Shore, Captain G Richardson, Captain Adrian Stokes, Captain W S Lazarus Barlow Captain E M Cowell, Major J W McNee, and Captain A. Petrie Consignments from Egypt representing the diseases and wounds of the campaign in Gallipoli were sent by Captain G B Bartlett, and proved of particular value In the spring of 1917 he appointed Sir John Bland Sutton to organise the collection of specimens from hospitals at home—especially hospitals at which particular kinds of wounds are being treated, and in that direction also said Sir Alfred Keogh, the objects of the Medical History Committee were being fulfilled

The credit of holding an exhibition of the collection while the war is still going on was attributed by the Director General to Sir Arthur Sloggett, Director General of Medical Services in France, who urged that in this way the exhibition of specimens would have an immediate educative value On the question being referred to the Council of the Royal College of Surgeons of England, the College said Sir Alfred Keogh, at once made arrangements to proceed to the preparation of specimens for exhibition, the Medical Research Committee giving financial assistance Mr S G Shattock, pathological curator to the College and his assistant, Mr Cecil Beadles, undertook the dissection, examination, and exhibition of wounds in the various systems of the body Colonel F M Caird, Colonel Sir R Jones, Captain E M Cowell Captain Raymond Johnson Sergeant F A Izzard (of the Pathological Museum of the University of Cambridge) Captain G Richardson, Mr R H Burne, Captain H E Gamlen, Dr F Stoney Captain F A Hort, Dr Colin Mackenzie, and Sergeant A K Maxwell were among those mentioned by the Director General as having in various capacities assisted to make the collection thoroughly representative, while he added that special thanks were due to the conservator of the Hunterian Museum, Professor A Keith, who assumed responsibility for the description and arrangement of macerated specimens illustrating the lesions inflicted by modern missiles so far as bones and joints were concerned

The Director General closed his address by making a special reference to the exhibitions of plastic surgery supplied from the Queen's Hospital, Sidcup, where admirable sketches have been made of before and after conditions by Professor H Tonks, F R C S, with models and casts by Private J Walkley Edwards, from the Military Orthopædic Hospital, Shepherd's Bush, represented by casts and drawings of deformed limbs before and after operation, and from No 13 Stationary Hospital in France, whence have come a remarkable series of models, for which Major A Charles Valadier and Captain H L Whale are responsible, showing war wounds of the jaws and the means which have been adopted for their treatment To an extensive series of skiagrams of face and jaw injuries from the Croydon Military Hospital, sent by Colonel W T Lister, the Director General also called attention He then declared the Museum open

The Collection of War Specimens

Three rooms in the Hunterian Museum have been given up to the exhibition of the Army medical collection Room 1 contains the section illustrating general means of wound prevention and the specimens of bone injury Under the heading of Means of Protection we find metal helmets, breast plates, masks and respirators, several helmets being shown bearing evidence that the heads of the wearers had been saved from mortal wounds We next have specimens of wounds of the vault of the skull, among which are remarkable examples of extensive destruction, of perforation in all the diameters, of gutter wounds, and especially some interesting injuries where a very small missile has produced a far larger fracture than could have been expected, and other cases where a blow has caused a fracture of the inner plate of the skull, the outer plate remaining intact There are in this room some notable specimens of injury also of the base of the skull and spinal cord, the upper and lower limbs and pelvis

The second room contains specimens prepared by Mr Shattock and Mr Beadles, and it is here that the effective characters of the wounds met with in modern warfare may be studied, both in their immediate and in their remote effects Examples are set out derived from former wars—chiefly dried or bone preparations, also examples of gunshot wounds culled from civil practice There are specimens from soldiers who fought with Sir John Moore in his retreat to Corunna, there are a few examples from Waterloo, and more of the wounds and injuries of the Crimean War and there is quite a good series from the Austro Prussian and Franco-Prussian wars In those wars the same type of bone injury and the same septic inflammatory sequelæ may be noted, as is to be observed in the specimens of the present war, for the wounds produced by shrapnel and by shell fragments are of the same nature now as in former wars, the septic sequelæ are also the same In this room are placed a number of models obtained by the late Sir Victor Horsley from his experiments to demonstrate the explosive effects of high velocity bullets Such bullets were fired into blocks of soft clay, the models represent the track of the bullet in the clay In this room the study of modern military wounds can be made—wounds of entrance, wounds of exit wounds at various stages after the date of infliction, in various stages of healing, and in various stages of sepsis There are specimens of "excised wounds"—from cases where the surgeon has sought to remove the injured and infected tissues as soon as possible after the date of infliction A series illustrating injuries to the chest, pleura, and lungs with the various sequelæ which may follow such lesions, is of great interest There is one very remarkable injury of the heart, the anterior wall of the right ventricle is extensively lacerated—yet the officer, a member of the Flying Corps, brought his machine safely to earth! There is a very complete representation of vascular injuries, selected and recorded by Sir George Makins

Injuries of the bowel, stomach kidney genito urinary tract, spleen, spine, larynx, and lung come next for exhibition Certain specimens will be bound to attract serious study as well as reflection They represent the lungs of men who suffered in the first cloud of poisonous gas sent over our lines by the enemy early in 1915 at Ypres The effects of that poison on the whole respiratory system may be studied at all stages, early and late On the same stand are recorded the changes which become apparent in the kidney in cases of trench nephritis Here, too, are represented the conditions, organic disturbances, and disorganisation produced by the *Bacillus aerogenes*

In one group of specimens are shown successful operations of a general kind, as distinguished from those upon special parts like the face and mouth This group comprises successful removal of injured kidney or spleen, of pieces of wounded blood vessels, cases where vessels have been successfully sutured, the successful removal of wounded loops of the intestine, artificial union of the fractured ends of bones, removal of large fragments of bone or even entire bones, such as the astragalus and scapula, resulting in the saving of limbs

In the third room there are hung on the walls a series of drawings by Sir Charles Bell, made in Belgium when he was treating the wounded from Waterloo, and in company with them will be found a wonderfully graphic series of sketches by Colonel F M Caird representing certain conditions studied by him in France such as the various stages in the development of "trench foot" There are also rapid drawings of the conditions resulting from guillotine amputations and pictorial notes of the effects of Yperite, one of the poisonous offensive German gases

Then follow, on the same wall, a collection of Sergeant A K. Maxwell's drawings, accurately and minutely detailed records of clinical conditions, seen in our military hospitals in France To the expert each drawing tells its own story, for the less expert the attached explanatory cards will be of service There are also here some excellent drawings by Mr S A. Sewell, who is well known as an illustrator of pathological subjects

At the north end of Room III, close by the door entering into the Museum Hall are placed a series of specimens for which Major Valadier, R.A.M C (No 13 Stationary Hospital B.E.F), is responsible In this work he has had associated with him H L Whale R.A M C They illustrate the nature of the jaw wounds and facial injuries which have undergone treatment at that hospital with the results obtained by operation The exhibits include plaster casts, excellent photographs (many of them in colour) X ray photographs, and a set of wax models of high workmanship

A group of casts and models obtained from the Military Orthopædic Hospital Shepherd's Bush, follows The condition of disabled and deformed limbs before and after treatment are shown by means of plaster casts, the treatment adopted, splints, &c, are represented by means of models

Next we have an exhibit of great interest from Queen's Hospital Sidcup (formerly Cambridge Hospital, Aldershot) Wax models, plaster casts and particularly a series of strong and vivid drawings by Professor Henry Tonks, F.R.C S, of the Slade School of Art depict for the visitor the facial deformities which Major H. D Gillies and Captain J L Aymard are called on to treat, the methods which they invent and adopt, and the degree of success which attends their efforts The models and casts are the work of Sergeant E Phillips and Private J Walkley Edwards, who are attached to Queen's Hospital

On a stand in the centre of the room, immediately in front of the Hunter statue by Weekes, is placed Colonel W T Lister's collection of injuries and wounds of the eye Here may be seen the very numerous forms of lesions which affect the eye in modern warfare—rupture of the eyeball from various causes the lodgment of missiles, and the pathological sequelæ A series of drawings elucidate the functional and clinical disturbances which were observed in each case

Arranged along the centre of the room is a large collection of casts models, and splints from Queen Alexandra Military Hospital Millbank sent by Captain F A. Hort R A M C

Colonel V Soubbotitch of the Serbian Army Medical Service, has placed on exhibition his splint apparatus for treatment of fractures of the lower limb

There can be no doubt that the policy of holding an interim exhibition of the collection in the stage in which it now is will be of remarkable value. There is enough material at present to give the result of collective skill, men will be able to learn from each other's ingenuity, and to avoid each other's errors As the official catalogue of the Museum says It is when one surveys these collections that one ardently wishes that military surgeons of former campaigns had taken some pains to preserve the medical and surgical conditions they were called on to face It is so hard for a surgeon to realise that the conditions he is only too familiar with in the heat of a campaign are unknown to those who do not share with him the labours of the field and will also remain unknown to those who have to undertake the care of soldiers in future times unless a record is made. There cannot be any doubt that in our former wars we have been too apt to attend to the medical exigencies of the campaign and when it closed to bury our experience instead of consolidating it for the use of a future time and generation

Correspondence.

"Audi alteram partem"

HOME-BRED MALARIA

To the Editor of THE LANCET

SIR,—Dr H B Newham has done well, in your issue of to-day, to call attention to the importance of distinguishing recurrences in soldiers from infected countries and the true home bred malaria I write to urge the most careful study of suspected cases of the latter A few have occurred and there are sure to be others, as there are hundreds of malaria patients in the country and the anopheles is widespread There are no grounds for alarm A colony of patients from Salonika has fluttered the academic dove-cotes in Oxford where mosquitoes are prevalent—even anopheles have invaded the bedroom of the Regius Professor of Medicine! Every precaution has been taken by Major Ormerod and Captain Dale, under the direction of Sir Ronald Ross, and, so far as I know, no infection has occurred In temperate climates districts from which malaria has disappeared have not, to my knowledge, been reinfected Italian labourers brought the disease to the New England States and there were a few cases but no serious outbreak, nor was the progressive fall in the incidence of malaria in Baltimore interrupted by the importation of many infected Italians The slight risk, then, from our malarial soldiers in this country may be faced cheerfully The same may be said of Canada, to which country many infected soldiers have returned Parts of the Province of Ontario were hot beds of the disease, which within my memory has disappeared from the districts about the western end of Lake Ontario and the northern shores of Lake Erie The marshes are there and the anopheles are there but the disease has gone. As in parts of Italy, the important factor appears to have been the cinchonising of the inhabitants I retain lively recollections of the buzzing ears of my boyhood from the large doses of quinine administered to us in the spring and autumn —I am, Sir, yours faithfully,

Oxford, Oct 13th 1917 WILLIAM OSLER

"ANOTHER CASE OF MALARIA CONTRACTED IN ENGLAND"

To the Editor of THE LANCET

SIR,—In my note published under this title in your issue of Oct 6th I should have stated that there was no history to be obtained of a previous attack of malaria or of any illness suggestive of malaria Undoubtedly the possibility suggested by Dr H B Newham in your last issue of a primary attack in Salonika cannot be excluded, but this is exceedingly unlikely and in view of the publication in your columns of other cases of malaria contracted in this country there seems no good reason for assuming an explanation so much more improbable I am, Sir, yours faithfully,

R LOY WILCOX

North Western Hospital N W Oct 15th 1917

THE GERMICIDAL POWER OF FLAVINE

To the Editor of THE LANCET

SIR,—Professor R T Hewlett, in your issue of Sept 29th, offers some criticisms of our work on flavine.[1] His conclusion is, firstly that from his experiments—

"The germicidal value of flavine comes out very much lower than that stated by Browning and his co-workers The difference between the two sets of results is probably due to the use in my experiments of a number of organisms much larger than that employed by Browning and his co-workers

This demands several observations 1. Professor Hewlett ascribes to us the use of an amount of organisms 12 times less than we actually used, he has evidently misread our original work but this becomes a minor point in view of the fact that in our second communication (of which Professor Hewlett was cognisant but to the substance of which he makes no reference) we had already published our work with larger numbers of organisms, which, so far as one can judge from Professor Hewlett's paper, quite equalled the amounts employed in his experiments 2 Professor Hewlett knows very well that the "*germicidal value*" affords significant information only when several antiseptics are compared under precisely similar conditions In our original *communication* we gave the comparative values, as obtained in repeated tests, from which the high potency of flavine (acriflavine) was clearly apparent Now Professor Hewlett finds fault with our results in the case of flavine, but he does not accuse us of giving unjust figures with regard to the old antiseptics, and it is by *the latter* that the comparative potency of flavine is estimated Further, in his own work on flavine he omits all comparisons, we feel sure that Professor Hewlett would not desire readers to believe that he wished them to accept his statements as mere dogmatic assertions and yet that is in effect what he does The general medical reader, who is himself without laboratory facilities can only draw conclusions from the data afforded, and Professor Hewlett omits half of the data which are necessary in order to support his contention that we have exaggerated the potency of flavine Again, Professor Hewlett raises the old point that the action of an antiseptic when mixed with a quantity of pus affords an important indication as to its therapeutic efficiency in an infected wound From the point of view of use as a test medium, pus is so extremely inconstant in composition that results vary enormously, *but, as on a previous occasion,*[3] *we can only repeat that any* surgeon who treated infected wounds by mixing up antiseptic with the pus contained in them, would entertain a curious idea as to his functions !

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[1] Browning Gulbransen, Kennaway and Thornton Brit Med Jour vol i 1917 p 73.

[2] Browning Gulbransen and Thornton ibid. vol. ii., 1917 p 70

It seems, however, that the real meaning of Professor Hewlett's work is an attempt to give expression to the view that a substance which is to possess any therapeutic value as an antiseptic must *rapidly kill* organisms The time hallowed tests employed in the standardising of antiseptics of course gave information on this point and almost on nothing else, the practical inefficiency of the substances, which were accredited by such tests e g phenol and mercuric chloride when it came to putting an end to suppuration in infected wounds or to preventing its occurrence, is well known Now, we have shown that one of the pre eminent qualities of the flavine bodies is their *antiseptic* power in the true sense of the word, i e, their capacity—in a serous medium, such as exists on the surface of a wound which is subjected to the ordinary procedures of surgical cleansing—for inhibiting the activity of organisms in very high dilutions, which are relatively harmless to the tissues This combination of desirable properties in one substance is new, but the idea of antiseptic action is not new, the conception of its value appears, however, to be novel to those who have concerned themselves with the cleansing of rubber gloves, sterilisation of infected rooms or sputum, and other common applications of antiseptics (purposes for which we have never recommended flavine), and, being novel, it seems to be either misunderstood or else regarded as odious according to the temperament of the critic[4] We shall however, endeavour to pursue our search for those properties of antiseptics which can be determined in the laboratory and which are of use as indicating substances of therapeutic value and we shall be content to be judged in the long run by the massed opinion of those who are bound to rely on such adjuncts in the treatment of their patients We do however, deprecate destructive criticism, which contributes little or nothing to advance towards the solution of a most urgent problem, but which almost seems devised—however unintentionally—in order to "scare off" those who might be inclined to give an unbiassed trial to substances for whose utility in practice there is already a great body of evidence

I am, Sir, *yours faithfully*,

C H BROWNING

Middlesex Hospital Oct. 11th 1917

WAR DEAFNESSES

To the Editor of THE LANCET

SIR,—In a leading article on War Deafnesses in your issue of Oct 13th you refer to a paper of ours which appeared in THE LANCET of the previous week Two criticisms call for reply Firstly, you state your belief that 'any other powerful stimulus applied during the removal of the subconscious determination against hearing would have been as effective as suggestion proved," but you do not *give any idea of the nature of such stimuli* Both of our cases had been treated without success for several months before we saw them by all kinds of powerful stimuli, and we applied every means we could devise before resorting to the pseudo-operation, the instantaneous and complete success of which surely justified the method There is no question of its "frequent" use, as we have only applied it in the very exceptional cases in which all other treatment, such as simple re education and persuasion, or suggestion with or without the aid of electricity, whilst awake, asleep in the hypnotic state, or under light etherisation had failed

Secondly, you express doubt *as to the correctness of our* conclusion that total deafness associated with continued excitability of the posterior labyrinth is evidence of hysterical *deafness*, because '*two cases* are quite an *insufficient basis* for such a generalisation" But our conclusion is based on over 200 cases, not on the two cases which we quoted in detail only because of the exceptional interest attached to the dramatic manner in which they were cured Before our conclusion can be rejected some very much stronger evidence is required than a bald statement to the effect that "cases of mild labyrinthitis occur in which there appears to be total deafness, but in which the canal reflex can still be excited" What is the evidence for this? Our experience teaches us that in such cases the mild labyrinthitis leads to *mild deafness, the complete deafness being due to the* addition of an hysterical element This is a matter of extreme practical importance as in such cases we have always succeeded in removing the hysterical element by suggestion so that partial hearing was noticed, sometimes many months after a diagnosis of permanent total deafness had been made elsewhere On the other hand, acceptance of the notion that mild labyrinthitis may lead to complete deafness must result in the neglect of such treatment and the consequent perpetuation of the condition There can thus be no question *that from the patient's* point of view *our* conclusions and the results which follow from these are infinitely more desirable than the pessimistic view taken in your leading article

We are, Sir, yours *faithfully*,

ARTHUR F HURST,
E A PETERS

Netley Oct 15th 1917

*** The success in the hands of Major Hurst and Captain Peters of the pseudo operation as a sequel to a course of suggestion in the two cases cited is so striking that others will undoubtedly follow in their steps and we therefore expressed the hope that some other stimulus less derogatory to the status of surgery might be found equally efficient The *existence of cases of total deafness* with retention of canal excitability is a matter of pre war experience —ED L

INSANE SAILORS AND SOLDIERS

To the Editor of THE LANCET

SIR,—The Board of Control has issued a circular with reference to "Service patients," or, in other words, sailors and soldiers who have become insane or are *otherwise* mentally affected To suggest, as has been done, that asylums would in any case have had to receive insane sailors and soldiers as paupers and keep them as such is *introducing* into the question the lowest argument of all—the pecuniary one And the question is not yet and by no manner of means settled At the present moment insane soldiers are being admitted to county asylums as pauper lunatics through the medium of the Poor law

I wish to comment on the Circular of Instructions issued by the 'Board of Control" on June 27th of this year relating *to the classification and* treatment of insane sailors and soldiers as "Service patients" Do not let us, then, *obscure* the issues by wondering what we are to do with insane sailors and soldiers after the war and how to cut their cost of maintenance to the lowest possible limit, which *seems to* be the end in view The question of cost of both present and future accommodation and *maintenance* ought not to be approached in a parsimonious spirit and yet it is at the root of the matter, because up to the present the Government has shown no desire to build asylums *for* the accommodation of insane sailors and soldiers, nor to provide for their accommodation other than in pauper asylums

But the nation's indebtedness to those broken men calls for provision for them other than in pauper asylums and in association with pauper and even criminal patients. The mere fact of giving them the cognomen of "Service patients" and paying for their maintenance at a little over the pauper and under the private rate will not dispauperise them in any sense of the term. Without labouring the point or entering into actuarial details, the allowance of 3s 9d above the pauper maintenance-rate is insufficient to clear them of the taint and stigma of pauperism.

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[3] Ibid 1917 I p 177

[4] See Browning THE LANCET Sept 15th 1917

To my mind there appears to be a very simple solution of the difficulty. Let the Admiralty and War Office at once decide that no insane sailor or soldier be discharged from either service until some months after the war has ended. In this way they can be detained under the Naval and Military Acts, and without certificate of insanity, in military hospitals or in places taken over as such. They will thus be saved from at least documentary evidence of insanity—the insanity which, but for the extraordinary vicissitudes through which they have passed, would in many cases have never occurred. Allocate, therefore, one or a portion of one of the asylums taken over by the War Office as military hospitals for this purpose. This would assure the relatives that these patients were not associated in any way with the pauper and criminal insane in pauper asylums. The Government apparently wishes to avoid the expense of the erection and upkeep of an asylum of its own; it prefers to pay for its insane soldiers at a maintenance rate that still keeps them within the confines of pauperism, and it is apparently willing that they associate with the pauper insane. It shelves its obligation in this way. And the Board of Control has apparently acquiesced. An asylum taken over by the War Office and devoted to this purpose would, of course, as time goes on, have an annual diminishing number owing to death or recovery, and would in the natural course of events, as these changes took place, revert to its original owners—the Asylum Committee—and to its original purpose, the accommodation of pauper lunatics. Any argument that with diminishing numbers this would entail the remainder being kept at an extravagant cost may be dismissed as puerile, for surely it is not beyond the official mental capacity to conceive that a smaller building could be taken over, and, further, the same objection, if objection it be, applies in the case of asylums and other buildings taken over for the wounded. In any case the Government will require after the war to erect an asylum for insane soldiers, as the present Government ones will not have nearly sufficient accommodation.

If the policy of allocating one or a portion of one of the asylums referred to were adopted, for at least the period of the war, the only possible objection would be that friends owing to great distance could not visit the patients. All war, however, inflicts hardships, and even in time of peace how many hundreds of soldiers serving abroad do not see their friends for many years. Moreover, to my mind all insane sailors and soldiers should be accepted as "Service patients" from the commencement of the attack, and quite irrespective of former attacks of insanity, any history of heredity or mental deficiency, or any form of insanity due to syphilis contracted years before the war. There must be no inquiry into antecedents. The country has enlisted and made use of these men in its defence, and there ought to be no discrimination in order to avoid responsibility. No such sophistries and refinements hold in the "Workmen's Compensation Act." If all insane sailors and soldiers are not classed prior to admission to an asylum as "Service patients," irrespective of family history, former attacks of insanity, insanity due to syphilis, epilepsy, &c., there is bound to be further agitation and trouble.

Again I say the Government should give a clear pronouncement on these points.

I am, Sir, yours faithfully,
JAMES F. GEMMEL.

THE TREATMENT OF ENURESIS

To the Editor of THE LANCET.

SIR,—Any addition to our present methods of treatment of this distressing complaint is of value to the medical profession. I should like to be permitted to state that, following the advice of my friend Dr. R. C. Mullins, of Durban, I have successfully dealt with in the Genito-Urinary Department of Guy's Hospital a fair number of cases by a very simple form of treatment of which I had not heard previously to 1914; also I have not found anyone who was familiar with it since that year, although, doubtless, many of your readers have tried it. The method consists in the insertion of a catheter into the bladder and running fluid slowly through into that organ, at a very low pressure. At first only that amount of fluid which the patient can tolerate (say three ounces) is inserted. The fluid injection is repeated after a short interval and withdrawal of the fluid already inserted, but a very small increase in amount is permitted. This is repeated three or four times with gradually increasing quantities of fluid. It is found that the patient can tolerate slight increases. The treatment is carried on over a period of a week or ten days, until a quantity of fluid amounting to 10 ounces can be retained by the patient. The fluid injected is boracic lotion at a temperature of 100° F.

The essential points of the treatment are: (1) The passage of a clean catheter; (2) the injection in gradually increasing quantities of a mild antiseptic at a little above body temperature and at a very low pressure. The bladder is thus trained to hold more fluid than it has previously done. All the patients upon whom I have tried this treatment, at whatever age, have very much improved in their power of retention, wherefore I have decided to put the method on record.—I am, Sir, yours faithfully,

A. R. THOMPSON,
Surgeon in Charge of the Genito-Urinary Department,
Guy's Hospital.

Wimpole-street, W., Oct. 8th, 1917.

QUININE THERAPY AND HYDROTHERAPY IN THE TREATMENT OF MALARIA

To the Editor of THE LANCET.

SIR,—Though the therapeutic value of quinine in severe malarial infections seems at the present time to be held in less confident esteem than formerly, the potency of this drug in affording relief from urgent symptoms in the considerable number of such cases which I was recently called upon to treat was a revelation to one who, like myself, has had no such previous experience, and as proficiency was gained in its use and administration urgent symptoms, especially those of cerebral type, no longer gave rise to the keen anxiety that they at first occasioned. On the other hand, as has been frequently noted by other observers, it was essentially in those persons in whom the disease became dormant, with only occasional exacerbations, that quinine proved to be less efficacious, which may have been due to the fact that these patients did not receive the massive dosage that was accorded to those in whom such urgent symptoms were present; for in order to procure good results it is, in my experience, essential that the drug be used with no sparing hand, and essential too, of course, that after administration it shall be absorbed.

Oral administration is not dependable. In the first place a large dose of quinine in mixture is very nasty, and such is the weakness of human nature, that patients will sometimes throw away a dose which they pretend to have taken. Secondly, when swallowed, it is quite uncertain at what rate it will enter the blood stream, a factor that must vary considerably in different individuals. In many patients an extraordinarily thick white furring of the tongue develops as soon as they begin to take quinine mixture, and in them it is unlikely that the process of absorption goes on satisfactorily or completely, whilst if exhibited in the form of compressed tablets the drug may never be absorbed at all. Thirdly, in addition to those effects that are desired, other undesirable effects are sometimes produced which may lower the patient's resistance towards other diseases, and especially, one would think, towards any intestinal infections that may be prevalent. From personal experience it is certain that an acute diarrhoea may be set up after taking no larger dose than 10 grains of the sulphate, for I could reckon on a night of colic with nine or ten watery motions after taking such a dose of quinine the previous evening for supposedly prophylactic purposes.

In severe cases, therefore, the drug should be given by injection. For this line of treatment the intravenous route is no doubt the most certainly efficient, but this method is also not unattended by disadvantages, and the results of intramuscular injection were so satisfactory that it seemed unwise to discard this latter in favour of any other method. 15 or 20 grains of the bihydrochloride were usually given at the commencement of treatment, which dose was repeated in the course of a few hours when coma or other urgent symptoms were present, and under continued energetic treatment even the apparently most desperate cases recovered For instance I had a man in my wards who lay in deep and stertorous coma for over 36 hours and who ultimately made a good recovery under large doses of quinine bi hydrochloride given in this way, 90 grains being administered in 24 hours This is a large dose and one that I personally never exceeded, but I have been shown cases in a foreign hospital where the maximum daily dose was 8 grammes (120 grains) given by intravenous injection, and the responsible medical officer in charge was himself a resident of a highly malarious country and possessed a wide experience in the treatment of the disease It would be interesting to know whether, when such doses have been constantly employed, anything other than good results have been obtained in severe cases of malaria

But by no means all cases of malaria are severe, and there are malarious countries where other means of treatment are also resorted to I have seen a peasant with a temperature of 104° F, who was suffering from both malaria and dysentery, standing to sluice his head and chest with cold water, although he was almost too weak to crawl out of bed at all, and others, too ill to rise, have called out daily for the same thing This belief in the efficacy of cold water is doubtless the result of experience and of the teaching of Priessnitz and his followers during the first half of last century, but it is not merely a local doctrine, for at the time that I found these peasants applying this line of treatment for themselves it was interesting to read in THE LANCET (1916) reports of successful hydrotherapeutic measures in the treatment of malaria in Switzerland Possibly it is precisely those cases with latent infections, in which, as already stated, quinine alone gives such disappointing results, that derive benefit from treatment by baths of various kinds If hydrotherapy has any influence at all, and there *must* be few who would deny that it has, it is surely to be expected that this would be demonstrated in just such a condition, in which liver, spleen, and other internal organs form the resting place for the infecting organism, which is ready to reassert itself whenever general conditions may be favourable for it to do so

For such a line of treatment, and especially at the present time, it may fairly be claimed that Torquay is peculiarly adapted, both by reason of its distinctive situation and on account of the thoroughly complete and up to-date bathing establishment that has lately been installed by the authorities, in which all baths and *douches*—hot and cold, local and general—can be administered with either salt water or with the exceptionally soft water from Dartmoor

I am, Sir, yours faithfully,
A E CARVER,
Late temporary Lieutenant R A M C

Torquay Oct 16th 1917

THE ANNUAL MEETING OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

To the Editor of THE LANCET

SIR,—The Society of Members of the Royal College of Surgeons of England addressed a letter to the Council of the Royal College of Surgeons of England respectfully suggesting that, in view of the present great pressure on the time and money of medical men at home, and the absence of so many of our members abroad on His Majesty's service, the annual meeting of Fellows and Members at the College should not be held this year the Society reserving its advocacy of the cause of the Members for future suitable occasions This suggestion was considered at a meeting of the Council of the College on Oct 11th, when it was decided to proceed with preparations for the annual meeting on the usual lines

We think that this decision is regrettable, as many Members will be unable to attend, while the expenses associated with the meeting might have been saved to the College funds

I am, Sir, yours faithfully,
SIDNEY C LAWRENCE,
Honorary Secretary Society of Members of the Royal College of Surgeons of England

Oct 14th 1917

SPIRAL FIELDS OF VISION AND NEURASTHENIA

To the Editor of THE LANCET

SIR,—Your review of Jones and Llewellyn's book on "Malingering," in your issue of August 4th, raises an interesting point regarding helicoid curves in the chapter on the eye contributed by me For while I have attributed spiral fields of vision to neurasthenia and not to hysteria, your reviewer believes that the converse is usually taught The helicoid appearance is, I think, universally considered to be due to the abnormally quickly induced fatigue typical of neurasthenic subjects I do not dispute the statement that helicoid fields were first observed in hysteria, but it is well recognised that neurasthenia may be associated with hysteria, and the peculiar field may, with plausibility, be referred to the neurasthenic element I think all authorities agree that if suggestibility be the salient feature of hysteria "fatigability" is the core of neurasthenia, and therefore a fatigue field is more characteristic of the latter syndrome

I am, Sir, yours faithfully,
W M BEAUMONT

Bath Oct 13th 1917

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

P Macarthur to be temporary Surgeon

ARMY MEDICAL SERVICE

Surg Gen R H S Sawyer C M G is retained on the Active List under the provisions of Articles 120 and 522, Royal Warrant for Pay and Promotion and to be supernumerary

Lieut Col H G Barling C B R.A M C T F to be temporary Colonel

ROYAL ARMY MEDICAL CORPS

T B Futcher C A.M C to be temporary Lieutenant-Colonel

Temp Major C Brown, Canadian Army Dental Corps to be temporary Lieutenant-Colonel while specially employed

Temp Hon Major B W White to be temporary honorary Lieutenant Colonel

Temp Hon Lieut Col L C Parkes (Major R A M C T F) relinquishes his temporary honorary rank

Lieut. Col T E Sandall Lincolnshire Regiment, T F, to be temporary Lieutenant-Colonel

Capt E D Caddell and Major B H V Dunbar D S O relinquish the acting rank of Lieutenant-Colonel on reposting

Temp Major G J Boyce C A.M C to be acting Lieutenant Colonel

Temp Major (Capt. R A M C T F) F A. Hopworth relinquishes his temporary rank on reposting

Temp Capts. (C A M C) G W Treleeven and S G Ross to be acting Majors

Temp Capt. F F Middleweek to be temporary Major whilst commanding troops on a hospital ship

Temp Hon Lieut Sir F M Farmer to be temporary Honorary Major

B Lyons to be temporary Captain

Temporary Lieutenants to be temporary Captains: R T Worthington V Colmer F J Colling A. G Gilchrist, G E Lloyd J Bradley Hughes F W Harrowell

H H Scott, late temporary Captain is granted the honorary rank of Captain

A. Renshaw to be temporary Honorary Captain whilst employed with the Welsh Hospital Netley

R Gellatly to be temporary Lieutenant whilst serving at the Huddersfield War Hospital

To be temporary Lieutenants R Edridge, A J B Leckie J Crean H McC Fleming A F Miller W McQuiban T F Ryan F P B MacTavish E W Goble J G Lessey J McNamara J Magner W Lovell W Murphy P D Maclean R W H Meredith W H C Patrick H E Alexander K. B Dyke A. H L. Thomas S M Green R T Edwards S W Matthews D Wardrop J B C Brockwell A B Fearnley J O D Allan W Bain

A O Delacroix to be temporary Honorary Lieutenant

Officers relinquishing their commissions —Temporary Captains D McD Wilson T Redmayne R H L O Callaghan T R Davey (on account of ill health) P M Turnbull F G Martin (granted honorary rank of Captain) Temporary Lieutenants K B Allan, J Pugh

Temp Capt. W J Bell C.A.M C resigns his temporary commission

SPECIAL RESERVE OF OFFICERS

Capt W H L McCarthy relinquishes the acting rank of Lieutenant Colonel on reposting

Capt. W McCombie to be acting Lieutenant Colonel whilst in command of a Field Ambulance

Lieutenants to be Captains F M Rorie J A W Cullen

To be Lieutenants Second Lieutenant G R Sharp (*from* Unattached List T F) D E Hearn (from Durham University Contingent O T C)

TERRITORIAL FORCE.

Capt. W B Keith is seconded whilst holding an appointment as Deputy Assistant Director of Medical Services and Capt. R C Canney is seconded for duty with a General Hospital

Capt. (temp Major) W S Colman relinquishes his temporary rank and is restored to the Establishment

W J Smyth (late Surgeon Captain A.M S) to be temporary Major Hampshire Medical Volunteer Corps

S P Matthews to be temporary Lieutenant and Medical Officer 8th Battalion Sussex Volunteer Regiment

J G Miller (late Captain R.A.M C) to be temporary Second Lieutenant, 4th Battalion Northumberland Volunteer Regiment

R. A. Walter to be temporary Lieutenant and Medical Officer 3rd Battalion Kent Volunteer Regiment

G Stowell to be temporary Captain Lancashire Medical Volunteer Corps

E Harrison to be temporary Captain East Yorkshire Medical Volunteer Corp

Temp. Capt and Medical Officer J Lytle from 2nd Battalion Shropshire Volunteer Regiment, Temp Capt G Hollies from 1st Battalion Shropshire Volunteer Regiment and H O Woodhouse to be temporary Captains Shropshire Medical Volunteer Corps

Temp Cap and Medical Officer E. Quayle from 2nd Battalion Lancashire Volunteer Regiment, to be temporary Major Lancashire Medical Volunteer Corps

A. Linnell to be temporary Captain Northamptonshire Medical Volunteer Corps

W A. Warters to be temporary Lieutenant and Medical Officer 8th Battalion Derbyshire Volunteer Regiment

R F H. Newton to be temporary Lieutenant and Medical Officer 7th Sussex Volunteer Regiment.

E. W Archer (late Captain R.A.M C) to be temporary Captain and Medical Officer 2 3rd Battalion, East Riding Volunteer Regiment

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS

In the September number of this journal Mr R E Savage protozoologist attached to the Royal Army Medical Corps publishes a report on the treatment of 59 cases of *Entamœba histolytica* infection to which Captain J R. Young contributes some clinical remarks Most of the cases dealt with acquired their infection in Mesopotamia, Salonika, or Egypt but some had their first attack on Gallipoli in the winter of 1915 Thirty seven of the cases were cyst carriers while 22 were acute cases The results of five different courses of treatment with emetine emetine with pulv ipecacuanhæ, and emetine bismuth iodide are described A joint paper by Captain T J Mackie and Captain H G Wiltshire discusses the diagnostic interpretation of the agglutination test in typhoid and paratyphoid infection occurring among typhoid vaccinated troops and Mr H. M Woodcock D Sc. of the Lister Institute of Preventive Medicine gives the result of some protozoological experiences during the summer and autumn of 1916. Other articles are the Intravenous Administration of Quinine Bihydrochloride in Malaria and a Remark upon the Form of the Parasite Responsible for Relapses (War Office Investigations) by Lieutenant-Colonel S P James I.M S., and Methods Employed in the X Ray Department of a Military Hospital with a Few Notes on One or Two Cases of Interest and on the Treatment of Trench Foot Adopted There by Dr Russell J Reynolds Colonel R. H. Firth again reverts to his enjoyable Some Musings of an Idle Man."

URBAN VITAL STATISTICS

(Week ended Oct 13th 1917)

English and Welsh Towns —In the 96 English and Welsh towns, with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 11 8 against 10·8 and 11 1 per 1000 in the two preceding weeks In London, with a population exceeding 4 000 000 persons the death rate was 12·0 or 0·5 per 1000 above that recorded in the previous week among the remaining towns the rates ranged from 3·6 in Acton 6·2 in Edmonton and 6·4 in Rochdale to 19·0 in Cambridge 19·9 in Middlesbrough and 21·9 in Stockton-on Tees. The principal epidemic diseases caused 381 deaths, which corresponded to an annual rate of 1·2 per 1000, and included 243 from infantile diarrhœa, 54 from diphtheria, 34 from whooping-cough 30 from measles 14 from enteric fever and 6 from scarlet fever The deaths from diarrhœa, which had been 344 267 and 278 in the three preceding weeks fell to 243 last week, and included 48 in London 16 in Sheffield 16 in Hull and 13 in Middlesbrough The 924 cases of scarlet fever and 1271 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 71 and 105 above the numbers remaining at the end of the previous week. Of the deaths from all causes in the 96 towns 120 resulted from violence The causes of 37 deaths were uncertified, of which 11 were registered in Birmingham and 3 in Darlington

Scotch Towns —In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2.500 000 persons the annual rate of mortality was 11·8 against 11·9 and 10 7 in the two preceding weeks. The 250 deaths in Glasgow corresponded to an annual rate of 11 7 per 1000 and included 10 from infantile diarrhœa, 7 from measles 7 from whooping-cough 3 from diphtheria, and 2 from scarlet fever The 67 deaths in Edinburgh were equal to a rate of 10·5 per 1000 and included 2 from diphtheria, 2 from infantile diarrhœa, and 1 from measles

Irish Towns —The 121 deaths in Dublin corresponded to an annual rate of 15·8 per 1000 or 4 3 above that recorded in the previous week and included 9 from infantile diarrhœa, 3 from diphtheria and 1 each from enteric fever and measles. The 87 deaths in Belfast were equal to a rate of 11 5 per 1000 and included 5 from infantile diarrhœa, 1 from enteric fever and 1 from diphtheria.

ROYAL MEDICAL BENEVOLENT FUND GUILD —The Guild has undertaken to administer a fund raised by the friends of the late Mrs John Phillips as a memorial to her work in aiding necessitous families of the medical profession A sum exceeding £500 has already been raised for an exhibition, and further subscriptions may be sent to the honorary treasurer, Mrs Muir "Yellow Wood" Weybridge A sum of £563 has also been allocated to the Guild by the friends and patients of the late Dr L Vernon Jones The annual income of both funds will be used for the education of children of those who are beneficiaries of the Benevolent Fund

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Temp Capt W T Chaning Pearce R.A M C, attached Liverpool Regiment, was educated at Cambridge and at Guy's Hospital London, and qualified in 1911 He held appointments at Guy's at the London Hospital, and at the Croydon General Hospital, and was in practice at Ramsgate before joining up

Capt K. T Limbery, R A.M.C, was a student at St Thomas's Hospital, London, and qualified at the beginning of 1916 He joined up shortly afterwards

Capt W D Reid, M C, R.A.M C, attached Manchester Regiment qualified at Edinburgh in 1910 The award of the M C was recorded in THE LANCET of March 10th, 1917, p 392

Capt N H W Saw, M C, R A M C, attached Worcestershire Regiment, was a student at Guy's Hospital, London, and qualified early in 1915, joining up shortly afterwards The award of the M C was recorded in THE LANCET of Sept 30th, 1916, p 621

Capt J H C Gatchell, R.A.M C, attached Royal Sussex Regiment, qualified at Dublin in 1912, and was in practice at Dunnamanagh, co Tyrone, prior to joining the R A.M C

Capt A. G Whitehorne Cole, R A.M C, was a student at St Mary's Hospital, London, and qualified in 1906 He held appointments at the Cancer Hospital and at St Mark's Hospital, London, and contributed several papers to medical literature He was in practice in New Cavendish street, London, before joining the R A.M C

Died of Wounds

Capt J J P Charles, R A.M C, attached Herts Regt, qualified at Edinburgh in 1909, and held appointments at the London Lock Hospital and at the Norfolk and Norwich Hospital He was in practice at Swanage before joining the R.A M C in August 1914

Capt L Oldershaw R A M C, attached Manchester Regiment was educated at Liverpool University and qualified in 1915, joining up shortly afterwards

Wounded

Lieut E H R Altounyan R A.M C attd London Rifles
Capt W McM Chesney M C, R A.M C
Capt A. Morris R.A.M C
Capt S J Simpson R.A M C
Capt W F Wilson, M C, R A M C, attd Royal Fusiliers
Lieut G S Lawrence R A.M C
Staff-Surgeon E L Atkinson, R N
Capt A. R Grant, R A.M C
Capt W McConnell, R.A.M C, attached Royal Fusiliers
Major J S Y Rogers R A M C
Lieut R C Rogers, R A.M C, attached R G A
Capt A. E Mackenzie, R A.M C, attached Royal West Surrey Regiment
Capt W F Young, R.A M C
Capt T B Brandon, R A M C
Capt F E Johnson, R A.M C
Capt F P Grove, R A M C, attd Royal Welsh Fusiliers

CASUALTIES AMONG THE SONS OF MEDICAL MEN

The following additional casualties among the sons of medical men are reported —

Brigadier General D E Cayley, C M G, wounded, son of the late Deputy Surgeon General H. Cayley, C M G

Temp Capt W T Chaning Pearce, R.A.M C, killed in action third son of Dr J Chaning Pearce, of Ramsgate

Capt H S Chalmers, Royal Field Artillery, died of wounds, second son of Dr A. K Chalmers of Glasgow

Capt L A. L Fink, M C, Bedfordshire Regiment, killed in action son of Major G H Fink, I M S (ret), of Finchley, London

Second Lieut H W Fleming, Bedfordshire Regiment killed in action, second son of the late Dr A. J Fleming, of Hampstead London

Capt J J P Charles, R A.M C died of wounds son of the late Professor Charles of Queen's University, Cork

Second Lieut D Heald, Rifle Brigade died of wounds, only surviving son of Dr H Heald of Ormskirk

Second Lieut S W Wayte, M C Royal Field Artillery died of wounds, younger son of Dr J Wayte, of Croydon

Capt A. A Clarke, M C Leicestershire Regiment killed in action only son of the late Dr A. Clarke, of Morley, Yorks

Second Lieut T G de Denne Devon Regiment killed in action, youngest son of Dr T V de Denne, of Sidmouth, Devon

Capt B W Conway, Manchester Regiment, killed in action, eldest son of Dr B W Conway, of Longsight, Manchester

Second Lieut J M Blake Devon Regt , killed in action son of the late Dr M D Blake, of Grantchester, Cambridge

MINISTRY OF NATIONAL SERVICE ITS MEDICAL ORGANISATION

The details of the organisation of the medical department of the Ministry of National Service have now been made public, and follow exactly upon the lines laid down by Sir Auckland Geddes in his recent speech at Nottingham which we published last week The Chief Commissioner of Medical Services with direct responsibility to the Minister is Dr James Galloway, whose duties are to organise and administer the medical service of the Ministry

Regions and Medical Commissioners

The regions into which the country has been divided for the purpose of making a medical survey of the male population of military age are as follows —

1 *Northern*, comprising Northumberland, Durham, Cumberland, Westmorland

2 *North Western*, comprising Lancashire and Cheshire Commissioner Dr G Redmayne Murray

3 *Yorks and East Midland*, comprising Yorkshire, Lincolnshire, Nottingham, Derby, Leicester Northampton, Rutland Commissioner Dr T Wardrop Griffith

4 *West Midland*, comprising Stafford, Warwick Worcester, Hereford, Shropshire Commissioner Colonel W H Bull

5 *Wales* Commissioner Dr W Bickerton Edwards

6 *South Western*, comprising Gloucester, Wilts, Somerset, Dorset, Devonshire, Cornwall Commissioner Sir James Porter

7 *East Anglia*, comprising Norfolk, Suffolk, Essex, Cambridge, Huntingdon, Bedford, Bucks, Oxford, Berks, Herts Commissioner Dr W.-Hale White

8 *South Eastern*, comprising Kent, Sussex, Hants, Surrey Commissioner Sir Charles Bedford

9 *London* Commissioner Colonel C R Tyrrell

10 *Scotland* Commissioner Dr Norman Walker

The Medical Boards

One or more medical boards will be established in each recruiting area into which the regions are divided The number of these boards is to be about one hundred, and the following places have been mentioned —

London Region —North London West London, South London, East London, Woolwich, Wandsworth, Wood Green, Hounslow, Holloway, White City, Camberwell, Stratford, Croydon

West Midland Region —Stoke-on Trent, Birmingham, Worcester, Hereford, Wolverhampton, Shrewsbury, Warwick, Lichfield (Stafford)

South Eastern Region —Brighton, Canterbury, Guildford, Maidstone Southampton

South Western Region —Plymouth, Bristol City Gloucester, Dorchester, Exeter, Taunton, Trowbridge Truro

East Anglian Region —Chelmsford, Oxford, Cambridge, Bedford, Huntingdon, Norwich, Ipswich, Aylesbury, Hertford Reading

Northern Region —Sunderland, Middlesbrough, Newcastle, Carlisle

North Western Region —Manchester, Lancaster, Ashton under Lyne, Warrington, Liverpool, Bury, Preston, Blackburn Chester

Yorks and East Midland Region —Derby, Leicester, Sheffield, Pontefract, Bradford, Northallerton, Hull, Nottingham, Lincoln, Leeds, Barnsley, York, Halifax, Northampton, Oakham

Scottish Region —Glasgow, Dundee, Ayr, Perth Galashiels Aberdeen, Edinburgh, Hamilton, Glencorse Nairn, Stirling, Inverness

Welsh Region —Cardiff, Wrexham, Newport, Carmarthen, Brecon

The new medical boards which come into being on Nov 1st will each consist of four local practitioners selected by the advisory board on the recommendation of the Statutory Medical War Committees from names furnished to them by the Local Medical War Committees Medical men who wish to serve are invited to communicate with their local committee or in the London district direct with the Central Committee A roster will be chosen of at least double the number of practitioners necessary to compose a board

Special Opinions and Appeals

In cases presenting difficulty, such as those of suspected tuberculosis, heart disease, and unusual defects of vision, the presidents of medical boards will be empowered to obtain the opinions of specialists, and it is hoped that the staffs of general and special hospitals throughout the country may be able to render assistance in giving special opinions In the case of appeals against the result of medical examination the exact mechanism will now be as follows Three medical assessors, appointed by the Local Government Board will be attached to the appeal tribunals Should the appeal tribunal on hearing a case decide that a medical re examination is desirable, they will forward all the papers bearing on the case to the medical assessors, who will re examine the man The decision of the medical assessors will be final as regards the man's physical condition and gradation

The New Gradations

We have already defined in general terms the four groups of the new gradation, and can now give them more precisely as follows —

Grade I to consist of men who attain the normal standard of health and strength and are capable of the physical exertion suitable to their age

Grade II includes those who do not attain the standard of Grade I from various causes, such as deficient physical development or slight defects, but are yet fit for work of a less strenuous kind Most of these are capable of improvement by training Grade I corresponds to Class A or General Service of the late classification and Grade II to classes BI and CI —i e , to garrison duty abroad and at home

Grade III includes those who from any cause are not suitable to undergo military training as combatants although they may be quite fit for one of the auxiliary Services connected with the Army, and fit also for the work on which they are already employed or its equivalent

Grade IV includes all those who are unfit both for military service and any work of national importance

Other Functions of the Medical Department

Another serious function of the medical department of the Ministry will be to consider the supply of students in the medical schools in its bearing upon the future strength of the medical profession and to determine the necessity for bringing back from the Services men who are now serving in a non medical capacity We noted last week the personnel of the medical advisory board which will keep in close touch with medical opinion and in coöperation with existing organisations To the names there given should now be added that of Mr Percy Edwards, of Liverpool

Manual of Medical Standards

In the manual of general directions for the guidance of medical boards, which is now nearly ready, a scheme is outlined by which every man is seen by each member of the medical board at some stage of his examination, while his final gradation is settled by the consensus of opinion of the members and president This procedure will meet the complaints which have been made in the past that the president omits to consult the opinion of his board or over rules their decision The scheme continues —

When a man wishes to appeal against the gradation of the medical board he must lodge his appeal within five clear days of his examination, and will forward in duplicate any medical certificates he may wish to place before the tribunal If the appeal tribunal after hearing the case decides that the claim is one in which they think medical re examination is desirable, they will forward all the documents bearing on the case to the medical assessors appointed by the Local Government Board, accompanied by the appeal tribunal's recommendation that the man should be re examined The medical assessors will inform the man of the date on which he should present himself for re-examination, giving at least three clear days' notice A representative of the medical board which graded the man will be present at the meeting of the medical assessors of the appeal tribunal, if they desire it, in order to supply any information which may be required The medical assessors will communicate their decision to the chairman of the appeal tribunal, who will then make arrangements for the final adjustment of the man's case The medical assessors will also give the man a card (known as 3291) showing the grade in which they have placed him

Questions of principle in the gradation of men suffering from certain disabilities which cannot be decided by reference to the manual may be stated in writing by the board or assessors concerned and referred to the Ministry, when the matter will be placed before the advisory board of the medical department for an opinion. It will also be within the power of the Ministry to refer such questions to medical men competent to decide on the particular subject

ITALY AND THE WAR

We have received from our Correspondent at the Italian front the following medical notes —

British Hospital at the Italian Front —During his recent tour of the Italian front Lord Derby paid a visit to the British Military Hospital, which, in the hands of the Italian Army engineers, is arising with marvellous rapidity in the orchard of a farmhouse in a small Austrian village In the original house are the offices, small wards and wards for sick officers, the main accommodation is in long two-storey buildings of brick and cement, each block containing two wards one above the other The operating theatre with anæsthetising and sterilising rooms, forms a separate building, and there are also a cook house, a laundry, and a bath house, with shower baths and small bathrooms The British Red Cross Society, which has rendered invaluable help in the equipment of the hospital, was represented on the occasion of this visit by its Chief Commissioner for Italy, Lord Monson The Secretary of State for War made a round of the wards and expressed his complete satisfaction with all the arrangements

The Medical Services at the Front.—The number of convenient buildings and the excellent state of the roads have been big factors in the medical arrangements for the Army on this front Field hospitals are established everywhere in fine buildings, and everywhere communications are easy by good roads with plenty of motor transport Such conditions would seem ideal, and should lead to ideal results if the organisation allowed But at present there is far too much evacuating from one field hospital to another a few miles further back, with the result that during an offensive all are overcrowded and overworked with the constant stream of wounded, and the latter are apt to get inefficient attention It is often several days with a brief stay in as many hospitals, before the originally lightly wounded case at last arrives where his wound can be definitely dressed By now the simple injury may have become seriously infected an unnecessarily long stay in hospital is ensured and a corresponding economic loss to the country It should not be difficult with the amount of motor transport at command to send all but the severely wounded direct from the ambulances to the base hospital, a journey by road of from two to three hours at most, and so leave the advanced hospitals free to deal with the serious cases and keep them as long as needful Distinguished civilian surgeons have been instant in urging this reform but at present without success Wounds of the abdomen thorax, and cranial cavity, however are treated in special advanced surgical hospitals under the charge of skilled surgeons and here the system seems wonderfully perfect under war conditions The treatment of sickness is very well organised, especially as regards infective maladies, under which category is included diarrhœa. These cases are all sent to special hospitals with ample accommodation in the war zone. The protection of the rest of the country is strictly cared for All sick are sent to isolation hospitals where they are bacteriologically certified free from infection before they can leave the zone of war for their homes or territorial hospitals With the excellent state of health prevailing this year among the troops at the front this seems almost an unnecessary precaution, yet it guarantees the country from epidemic disease and is rendered the more advisable on account of the frequency of disease among the Austrian prisoners, who are all disinfected and bacteriologically examined in the prisoners' concentration camps before being sent to the interior Over 60 bacteriological laboratories are thus employed in the war area.

Trachoma and Tuberculosis —The spread of these diseases is seriously occupying the attention of the profession of this country Before the war men suffering from trachoma and its after effects were not taken for military service and rejection for this cause alone reached the number of 31 per mille in Sicily After the outbreak of war, however, this regulation was no longer enforced, and very shortly it was discovered that the disease was spreading seriously in the Army An order was at once issued that all such cases should be sent to their homes, with two deplorable results—a great spread of the contagion wilfully among the troops and an involuntary spread among the civilian population With regard to tuberculosis, here, as probably elsewhere, there is a want of unity in the ideas which govern the medical officers in accepting or rejecting possible cases Professor Edoardo Maragliano, who speaks with acknowledged authority upon the disease, draws attention to this confusion in an article in the *Giornale di Medicina Militare*, and declares that the sole question before the examining medical officer is whether the man is infected with tuberculosis or not If the answer is Yes he must be rejected for the Army, however good his health may seem, for no doctor can guarantee that he has sufficient resistance for the successful endurance of a soldier's life, either within or behind the zone of war He should not be classified as fit for certain military duties Both the nation and the Government desire to have no tuberculous subject in the Army, the doctor who rigorously rejects them is rendering a service to the Army to day and to the country to-morrow

October 1917

MR FRANCIS DODD'S PORTRAITS —The leaders of our Navy and Army are being excellently drawn in colours by Mr Francis Dodd, the examples which have reached us being Sir Douglas Haig General Smuts, Admiral Sir John Jellicoe, and Admiral Beatty The reproductions of these portraits can be obtained from *Country Life* Tavistock street London, W C, at 2*s* 6*d* each They are on a large though not a uniform scale, and are mounted for framing with real good taste

LEAGUE OF MERCY WAR BAZAAR —As already announced the League of Mercy has organised a bazaar to be held at the Ritz Hotel on Wednesday and Thursday next in aid of the voluntary hospitals Princess Alice, Countess of Athlone, will open the bazaar on the first day and Princess Patricia of Connaught on the second The bazaar will be opened each day at 2 30 P M and the prices for the opening ceremonies will be 10*s* and 5*s* respectively After the opening ceremonies 5*s* will be charged on the first day and 2*s* 6*d* on the second and from 5 to 7 P M on the second day 1*s* Tickets may be obtained at the doors or from Mr W and Miss Andrews, honorary organising secretaries, 5 Belsize park, N W 3 and Mr R M F Robertson, 70, Queen Victoria street E C 4

PURE WHEATEN FLOUR FOR INVALIDS

THE following is the official Memorandum on permits for the use of pure wheaten flour for invalids issued by the Ministry of Food after consultation with the War Bread Medical Subcommittee of the Royal Society The Memorandum was required, as some misunderstanding appears to exist as to the granting of permits to use white flour, it is wise therefore, to indicate the procedure adopted in dealing with applications These are considered in the first instance by the scientific adviser to the Food Controller acting under the guidance of the War Bread Medical Subcommittee of the Royal Society After this first sitting of applications doubtful cases are referred to certain members of the subcommittee who have agreed to act as referees or they are laid before the whole subcommittee It should be understood that applications are becoming so numerous and the necessity for economising wheat so imperative that it is not possible to accede to all the requests sent in The committee is of opinion that in many cases no substantial grounds exist for the applications which appear to be made merely to satisfy some whim of the patient and not because the Government regulation flour has been found to be deleterious Speaking generally, it may be said that unless some affection of the digestive organs which in the opinion of the War Bread Medical Subcommittee justifies the use of pure wheaten flour is present, an application cannot be granted

1 *Acute affections of the stomach* (acute gastric catarrh, ulcer in its acute stages, &c) —In these cases the use of any form of bread whilst the disease is at its height is probably inadmissible During the convalescent stages the prescription of pure wheaten flour for a limited period may be

permissible if rusks and breakfast biscuits or ordinary bread boiled and sieved, or bread jelly, does not meet the case

2 *Chronic affections of the stomach* —In chronic functional disorders of the stomach (which make up the majority of cases of chronic dyspepsia) the use of pure wheaten flour can rarely be allowed for the reason that such cases are so numerous and so protracted in their course that it would be impossible to meet the demand without seriously depleting the wheat-supply of the rest of the population The use of the present bread, well toasted and thoroughly chewed, or of biscuits and rusks, should be recommended

In chronic *organic disease* of the stomach (carcinoma and chronic ulcer) white flour may sometimes be advisable if the patient is able to take bread at all

3 *Acute affections of the intestine* (acute diarrhœa, enteritis, colitis, ulcerative conditions, &c) —In these cases the same remark applies as in acute affections of the stomach

4 *Chronic intestinal affections* (chronic diarrhœa, chronic colitis, malignant disease, &c) —In some of these the use of white flour may be desirable, but evidence would be required to show that ordinary bread, toasted and thoroughly chewed, and the use of other measures have failed to relieve the symptoms

Cases of disease of the nervous, circulatory, or respiratory systems, or of the urinary organs or skin, or such general conditions as anæmia and diabetes, can rarely be considered suitable for grants

As regards tuberculosis, there is no evidence that the present bread is injurious Inquiries have been made from the principal sanatoria for the treatment of this disease, and in the great majority of cases the medical superintendents support the above opinion No institution for the treatment of this disease is receiving grants of pure wheaten flour

The conclusion of the subcommittee is that there are very few conditions, in the opinion of the War Bread Medical Subcommittee, in which the use of pure wheaten flour is *essential* The subcommittee is well aware of the difficult position in which the medical practitioners are placed, but it is necessary to conserve the wheat-supplies of the country, and every means of doing this must be adopted, and, if need be, enforced Refusal to give a permit does not imply that the medical certificate has been disregarded, but merely that the need of other applicants appeared to be more urgent

Above all, it is important that no discrimination be made between rich and poor in recommending these grants Nothing is easier to arouse or more difficult to allay than a suspicion that the poor are denied what the rich find no difficulty in obtaining

Regarding the war bread as an ordinary article of diet, the Memorandum states as follows —

Under war conditions when variety in foods is limited the bread made from G R flour is probably a more wholesome article of diet than that made from fine wheaten flour in pre war times The flour contains more lime salts than fine wheaten flour, and presumably is therefore more suitable for growing children It contains a greater variety of proteins which it is important to have, especially if bread enters largely into the dietary It contains more "germ," which adds to the proteins and increases the fat It also contains more of the class of substances known as vitamines, about which our knowledge is far from complete, but it is known that a deficiency of these profoundly impairs nutrition The bread requires to be thoroughly masticated, but if chewed well, or eaten as toast which necessitates chewing, or, finally (in the case of invalids), if it be used as indicated in the preceding paragraph, there are very few people with whom it could disagree

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AN X RAY INSTALLATION AT WORTHING —The Worthing Education Committee has decided to purchase and instal at the school clinic an X ray apparatus mainly for the purpose of the treatment of ringworm No fewer than 40 cases of ringworm, it was stated at the meeting of the committee, are now excluded from the schools of the town

SERVICE FOR DOCTORS AND NURSES —The Vicar of Brighton (the Rev Prebendary Dormer Pierce) is continuing the custom of holding an annual service for doctors nurses, and V A D workers, and this was held in the Parish Church at Brighton on Sunday evening last, a large number of medical men, nurses, and ambulance workers attending The vicar pleaded for close coöperation between priest and doctor The medical profession was a teacher of benevolence and human pity Doctors nurses, and V A D workers were all engaged in the same ministry —the revelation of God as the God of health

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND —At the quarterly examination in Practical Pharmacy, held on Oct 11th and 12th, the following candidates were successful —

Abraham Abelson University College Hospital Robert Geoffrey Addenbrooke Birmingham University Esawy Ahmed London Hospital John Binford Barnett, Birmingham University Jules Samuel Boruchowitz Brussels and University College Hospital Gerald Arthur Augustine Bradnock Guy s Hospital Geoffrey Wright Dando Birmingham University Douglas Alexander Dyer St George s Hospital Harland Bernard Easten, St Mary's Hospital Frank Edward Edwards Manchester University Francis Malcolm Timothy Flintan Middlesex Hospital Lydia Susan Fuller Maitland and Irene Mary Golding London School of Medicine for Women Christopher Frank Good London Hospital Ernest Alphonse Hardy Charing Cross Hospital Geoffrey Gordon Havers Cambridge University and St Bartholomew's Hospital Janet Hughes, King s College Reginald Jenner Clarke, London Hospital John Kendall Guy s Hospital Francis Wharton Lemarchand St. Bartholomew s Hospital Horace Sharman Le Marquand St. Thomas s Hospital; Elizabeth Esther McCulloch Liverpool University William Dundas Macrae London Hospital Guy Meadows Guy's Hospital Margaret Ombler Meek Charing Cross Hospital Henry Marie Alphonse Menage St Bartholomew's Hospital Edward Nisim Bombay University and University College Hospital Geoffrey Noott Guy s Hospital Ruth Emerita Pilgrim and Norah Katharine Priestley London School of Medicine for Women Henry Christoffers Powell Charing Cross Hospital Hubert Llewellyn Pridham, St Bartholomew s Hospital Owen Alfred Llewellyn Roberts St. Mary s Hospital Arthur Twynham Spoor Cambridge University and St Thomas s Hospital Edward Algernon Weaver Birmingham University; and Julius Maurice Winnett London Hospital

ROYAL COLLEGE OF SURGEONS OF ENGLAND —A quarterly meeting of the Council was held on Oct 11th, Sir George Makins the President, being in the chair The President reported the death on July 27th of Dr Theodor Kocher, of Berne, an Honorary Fellow of the College, and stated that he had written to the widow to express the sympathy and condolence of the Council A letter was read from Surgeon General Sir Alfred H Keogh, G C.B, expressing his great appreciation of having had the dignity of the Honorary Fellowship of the College conferred on him by the Council The President reported that Surgeon General Sir Alfred Keogh had attended that day to receive the Diploma of Honorary Fellowship and to sign the Roll, and that, after this ceremony, Sir Alfred Keogh had declared open the exhibition of War Office specimens of military injuries temporarily installed in Rooms 1 and 2 of the Museum Three months' leave of absence was granted to the President on Government work Leave of absence was granted to Sir Berkeley Moynihan from the October and November meetings of the Council during his absence abroad on Government duties The best thanks of the Council were given to Mr Alban Doran for his valuable services in continuing to arrange and catalogue the collection of surgical instruments in the Museum The President reported that in response to the request of the Museum Committee he had authorised the temporary installation of the electric light in Rooms 1 and 2 of the Museum for illuminating the exhibition on dark days The draft report of the Council to be presented to the annual meeting of Fellows and Members was approved Mr Bilton Pollard was re-elected a member of the Committee of Management Sir George Makins was appointed a member of the Court of the University of Liverpool for three years from Jan 1st next The President reported that he had granted the use of the theatre for five lectures in October to be delivered by Mr Twort, superintendent of the Brown Animal Sanatory Institution The President reported that he had given permission for the practical examination in physical anthropology, forming part of the B Sc London honours examination in human anatomy and morphology for internal students to be held at the College on Nov 1st There are three candidates

ROYAL INSTITUTE OF PUBLIC HEALTH —A course of lectures and discussions on Public Health Problems Under War and After War Conditions is to be held in the lecture hall of the Institute (37 Russell square, London, W C 1) on Wednesdays in October, November and December, at 4 P M as follows —Oct 31st Health Problems and a State Ministry of Health, by Major Waldorf Astor, M P Nov 7th Woman's Health and Work in War Time by Mrs Ogilvie Gordon, D Sc Nov 14th The Problem of the Disabled, by Sir Robert Jones Nov 21st Red Cross Work Under War Conditions, by Sir Arthur Stanley Dec 5th Women Workers and the Health of the Nation by Miss A M Anderson Dec 12th Some Aspects of the Tuberculosis Problem—Treatment and Training of Surgical Tuberculosis Cases by Mr Henry J Gauvain M R C S Dec 19th Public Health and Alcoholism in Women, by

Lord D'Abernon The Harben Lectures on the Treatment of Infected Wounds will be given by Dr Alexis Carrel, of the Rockefeller Institute, New York, on Nov 26th, 27th and 28th, at 4 P M The principal of the Institute will be in the chair Medical officers of health, medical practitioners, sanitarians, and others engaged in public health and national services are invited to attend No tickets of admission are required Further particulars may be obtained from the Secretary, 37, Russell square

THE MINISTRY OF HEALTH —The Lord Mayor is taking the chair at a National Conference of Sanitary Authorities, convened by the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy to be held at the Mansion House on Monday, Oct 29th, from 11 A.M , to consider the proposed Ministry of Public Health, with special reference to safeguarding the interests of motherhood and infancy in connexion therewith Tickets may be obtained free of charge on application to the Secretary, 4, Tavistock square, W C 1

CENTRAL MIDWIVES BOARD —A special meeting of the Central Midwives Board was held at Queen Anne's Gate Buildings, Westminster on Oct 10th, with Sir Francis H Champneys in the chair Certain midwives were struck off the Roll, the following charges, amongst others, having been brought forward —

Being in attendance at a confinement the midwife neglected to cleanse the child's eyelids at birth as required by Rule E 16 in contravention of Rule E 12 she neglected to provide for the cleanliness and comfort of patients during her attendance and failed to give adequate directions to the person entrusted with the duty of washing them The midwife did not enter her records of pulse and temperature in a notebook or on a chart carefully preserved as required by Rule E 14 and did not keep her register of cases as required by Rule E 24 she neglected to disinfect her hands and forearms before touching the generative organs of the patient, as required by Rule E 4 and neglected to wash the patient's external parts with soap and water and to swab them with an efficient antiseptic solution on the occasions required by Rule E 8 and employed for washing the patient the same water as that in which the child had been washed. The midwife not being scrupulously clean in every way as required by Rule E 2, neglecting to take with her to a confinement the appliances and antiseptics required by Rule E 3 and declining to afford reasonable facilities to the duly appointed officer of the local supervising authority for the purpose of investigating her mode of practice, contrary to the provisions of Rule E 25 A child suffering from inflammation of and discharge from the eyes and continuing so to suffer during her attendance, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required as provided by Rule E.21 (5) having continued in attendance on the patient after the tenth day she neglected to note the fact in her register with the explanation of the reason therefor as required by Rule E 12.

MEDICAL SOCIETY OF LONDON —The next meeting of this society will be held on Monday, Oct 22nd, at 8 30 P M , at 11, Chandos street, Cavendish square, W , when Mr Muirhead Little and Major R. C Elmslie, R A M C (T) will introduce a discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation There will be a practical demonstration with patients and appliances Colonial and American medical men on active service will be welcomed at the meeting

MIDDLESEX HOSPITAL MEDICAL SCHOOL —The following scholarships medal, and prizes were awarded during the session 1916-17 —Entrance Scholarships First, H B Shaw, second, E B Dancy third, J Whitby Broderip Scholarship, R E S Webb Lyell Medal and Scholarship and Freeman Scholarship, S C Shaw Hetley Clinical Prize, R E S Webb Second year's Exhibition, O S Hillman

ROYAL SANITARY INSTITUTE —A meeting under the auspices of this institute will take place in the council chamber of the Town Hall Newcastle-on Tyne, on Nov 9th at 7 P M , when general discussions on Standards of Meat Inspection under War time and other Conditions and Structure in Municipal Housing will be respectively opened by Mr Thomas Parker veterinary officer and inspector of provisions for Newcastle-on Tyne, and Mr John H Mole, sanitary inspector and surveyor for the Chester le Street rural district council Dr Philip Boobbyer will preside On Nov 10th a luncheon will be given by the sanitary committee of the corporation, and a visit will be afterwards paid to the Belgian village, Elizabethville when the planning and structure of the temporary and semi permanent types of the dwellings will be inspected Applications for tickets should be made to the honorary local secretary Dr Harold Kerr Health Department Town Hall Newcastle-on Tyne , or to the Secretary of the Institute 90 Buckingham Palace road, London, S W , not later than Nov 2nd

AT the quarterly meeting of the directors of the Naval Medical Compassionate Fund held on Oct 16th Surgeon General W H Norman in the chair the sum of £20 was distributed among the several applicants

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office directed to the Sub-Editor not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

BIRCH C M R C S L.R C P Lond has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Pangbourne district of the county of Berks

BUCKLE ISABEL F M R C S L R C P Lond House Physician at the South London Hospital for Women

GETHING JOHN E M B Ch B Liverp Assistant Medical Officer of the Middleton in Wharfedale Sanatorium

MATHEWSON J M.B B S R U I Certifying Surgeon under the Factory and Workshop Acts for the Bromley district of the County of Kent

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Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

ASHTON UNDER LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL —House Surgeon Salary £250 per annum, with board &c.

BERMONDSEY TUBERCULOSIS DISPENSARY —Medical Officer Salary £500 per annum

BIRMINGHAM (NEAR) ROMSLEY HILL SANATORIUM —Assistant Medical Superintendent, unmarried Salary £350 per annum with board &c

BOLTON INFIRMARY AND DISPENSARY —Female Senior House Surgeon Salary £300 per annum with board &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £140 per annum with board &c

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum with board &c.

DERBY DERBYSHIRE SANATORIUM FOR TUBERCULOSIS Walton Lane, near Chesterfield —Resident Assistant Medical Officer Salary £350 per annum with board &c

EDINBURGH CRAIG-LOCKHART POORHOUSE AND HOSPITAL —Assistant Medical Officer Salary £250 per annum with board &c

EVELINA HOSPITAL FOR CHILDREN Southwark London S E —House Physician and House Surgeon Salary at rate of £160 per annum with board &c

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL, Haverstock Hill N W —Casualty Officer for six months Salary at rate of £150 per annum with board &c.

LINDSEY (LINCOLNSHIRE) COUNTY OF THE PARTS OF —Assistant Medical Officer Salary £400 per annum

MANCHESTER EDUCATION COMMITTEE —Assistant School Medical Officer Salary £300 per annum

MANCHESTER HULME DISPENSARY Dale street Stretford road.—House Surgeon Salary £250 per annum, with apartments &c

MANCHESTER MATERNITY AND CHILD WELFARE CENTRES —Female Medical Officer for Treatment of Children's Diseases Salary £350 per annum

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN Park place Cheetham Hill road —House Surgeon Salary £150 per annum with board &c

NETLEY BRITISH RED CROSS HOSPITAL —Anæsthetist

NEWCASTLE UPON TYNE ROYAL VICTORIA INFIRMARY —Four House Physicians five House Surgeons two Accident room House Surgeons House Surgeon to Aural and Ophthalmic Department, House Surgeon to Gynæcological Department, House Surgeon to Skin and Venereal Department and House Surgeon to Out patient Dressing Department Also Anæsthetist

NOTTINGHAM AND MIDLAND EYE INFIRMARY --Female House Surgeon Salary £200 to £250 per annum with board &c

QUEEN'S HOSPITAL FOR CHILDREN Hackney road Bethnal Green E —House Physician Casualty House Surgeon and House Surgeon for six months Salary £100 per annum with board &c

READING ROYAL BERKSHIRE HOSPITAL —Honorary Assistant Surgeon

ROCHDALE INFIRMARY AND DISPENSARY —Senior House Surgeon and Second House Surgeon Salaries £400 and £200 per annum respectively with board &c

ROTHERHAM HOSPITAL.—Junior House Surgeon Salary £150 with board &c

SALISBURY GENERAL INFIRMARY —House Surgeon. Salary £150 per annum with board &c

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES —Assistant Resident Medical Officer at Lodge Moor Hospital

SHEFFIELD ROYAL INFIRMARY —House Physician Salary £120 per annum with board &c

SHREWSBURY ROYAL SALOP INFIRMARY —House Physician Salary at rate of £200 per annum with board &c.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon Salary £100 per annum with board &c

TRURO ROYAL CORNWALL INFIRMARY —House Surgeon Salary £150 per annum with board &c.

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WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY —House Surgeon. Salary £200 per annum with board &c.

THE Chief Inspector of Factories Home Office, London, S W , gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Arnesby Leicester and at Paignton Devon

Births, Marriages, and Deaths.

BIRTHS

LEGGAT —On Oct 5th at Killiney, Mill Hill London, N W, the wife of Captain G Leggat R A M C of twin sons

MEADE —On Oct. 12th, at Oak lane Bradford, the wife of Dr N G Meade of a daughter

POCOCK —On Oct 12th at Greenfields Newick Sussex the wife of Surgeon W A Pocock, R N of a daughter

MARRIAGES

HENDERSON—MACKEEN —On Sept 29th at Harlington Parish Church Captain Arthur T Henderson C A.M C to Frances, daughter of the late Dr R H MacKeen of Cape Breton

LANE—PUREFOY —On Oct 4th at St. Lawrence Church Chapelizod Samuel Armstrong Lane Captain R.A.M C, to Dorothy Emma Isolda, third daughter of the Rev and Mrs Amyrald Dancer Purefoy the Rectory Chapelizod

MACKENZIE—RICE —On Oct 13th, at St. John s Church Blackheath by the Rev F H. Gillingham Rector of Bermondsey assisted by the Rev W H Jordan Curate of St John s Colin Mackenzie M D Cantab, F R.C S, Captain R A.M C son of Mr A G Mackenzie F I A. of 29 Chester terrace, Regent s Park to Edith Annie elder daughter of Mr D W Rice of Shaftesbury

POWELL—WOOD —On Oct. 16th at All Saints Margaret-street, by the Rev H F B Mackay assisted by the Rev Canon Arnott and the Rev Edward Arundell Sir Richard Douglas Powell Bart K.C V O M D LL D D Sc., second *son of* the late Captain Powell Royal Welch Fusiliers to Edith Mary Burke younger daughter of the late Mr and Mrs Wood of Cleveland square and granddaughter of the late Dr Charles Burney Archdeacon of St Albans

TROUNCE—QUARTERMAINE —On Oct. 11th at All Souls' Church Langham place W Thomas Reginald Trounce Captain R A M C to May Agnes *second daughter of* Mr and Mrs J H Quartermaine of Walton, Farnham Surrey

DEATHS

AUCUTT —On Oct. 9th killed in action Donald Aucutt, Captain Royal Warwickshire Regiment and L M S S A aged 24

BROMHALL.—On Oct 7th at Parkfield St Trillo s Avenue Rhos-on Sea, Ernest Bromhall M.R C S L R.C P, of 132 Radford Boulevard Nottingham late of Rawtenstall Lancashire Interred at Rhos on Sea, 9th inst

CHANING-PEARCE —On Oct. 1st, killed in action Temporary Captain Wilfrid Thomas Chaning Pearce M C R A M C, M B B C Camb

CHARLES —On Oct 6th, of wounds received on July 31st, Captain J J P Charles M B

GILMORE ELLIS —On *Oct* 8th at Singapore W Gilmore-Ellis M D P C M O Straits Settlements after operation aged 57 (By cable)

REID —On Oct. 6th, killed in action Captain W Douglas Reid M C R.A.M C aged 30

SAW —On Oct. 9th, killed instantaneously on the battlefield Captain Noel Humphrey Wykeham Saw M C R.A.M C aged 25

SHERMAN —On Oct 10th died of wounds whilst serving with Field Ambulance, Captain Reginald Sherman, R.A.M.C M.B Cantab M R C S, L.R C P

N.B —A fee of 5s is charged for the insertion of Notices of Births Marriages and Deaths

BOOKS, ETC, RECEIVED

CHURCHILL, J AND A. London
Allen s Commercial Organic Analysis Fourth edition Vol IX Edited by W A Davis, B Sc. A.C G I With Index for all the Volumes 30s net.
Short Account of Explosives By A. Marshall A C G I F I C, F C S, 5s net.

FOURNIER L. 264 Boulevard Saint-Germain Paris
Chirurgie de Guerre les Fractures Déplacements Séquelles Décalcifications Raideurs articulaires consécutives Par Professeur Edmond Delorme Médecin Inspecteur Général de l Armée ancien Président du Comité technique de Santé Membre de l Académie de Médecine Fr 10

KIMPTON HENRY London and Glasgow
Experimental Pharmacology By D E Jackson Ph D M D 20s net

W B SAUNDERS COMPANY London and Philadelphia
Roentgen Diagnosis of Diseases of the Alimentary Canal By R D Carman M D (Mayo Clinic) and Albert Miller M D (Mayo Clinic) 25s net
Diagnostic Symptoms in Nervous Diseases By Edward L Hunt M D, Assistant Professor of Clinical Neurology College of Physicians and Surgeons New York City Second edition revised 8s 6*d* net
The Treatment of War Wounds By W W Keen M D LL.D, Emeritus Professor of Surgery Jefferson Medical College, Philadelphia 7s 6*d* net
A Manual of Nervous Diseases By Irving J Spear M D, Professor 12s 6*d* net
of Neurology at the University of Maryland Baltimore By Francis Ashley
Blood Pressure from the Clinical Standpoint Faught M D formerly Director of the Laboratory of Clinical Medicine at the Medico Chirurgical College Philadelphia Second edition thoroughly revised 15s net
The Prevention of Disease a Popular Book on Keeping Well By Kenelm Winslow B.A S M D, formerly Assistant Professor of Comparative Therapeutics at Harvard Medical School 7s 6*d* net
1916 Collected Papers of the Mayo Clinic, Rochester Minn Cloth 28s net

Notes, Short Comments, and Answers to Correspondents.

PUBLIC HEALTH IN EAST AFRICA.

HIS Excellency H Conway Belfield, C M G, Governor, has forwarded to the Colonial Office a report on the East Africa Protectorate for the financial year 1915–16 It includes the following particulars respecting the health conditions of the various districts —

Coast Zone —The average health remained good throughout the year There were 7112 cases of malaria treated, with only 14 deaths There were 6 cases of blackwater fever and 1 patient, a European died 27 cases of cerebro-spinal meningitis occurred with 12 deaths There were 317 admissions for dysentery with 39 deaths 26 Europeans were treated for the disease of whom 1 died. 12 cases of enteric fever were treated of whom 9 were Europeans there were 5 deaths, 4 being Europeans No case of plague was reported and no infected rats were found 41 cases of beri beri with 1 death were noted at Mombasa Native Civil Hospital. 6 cases of small pox were discovered of whom 2 died. 436 cases of leprosy were reported from settlements at Mombasa, Malinda and Lamu

Mountainous Zone —The number of admissions for malaria was 5352, a large increase over the number admitted in 1914 Nairobi was responsible for the largest number of cases but every township appeared in the list Of 520 Europeans affected 2 died 9 cases of blackwater fever were treated 2 being Europeans 1 death occurred in a native case The virulence of cerebro-spinal meningitis appears *to be dying down* During 1915 there were 3 cases among Europeans and 78 among natives with 3 deaths An increase was noted in cases of dysentery, 1647 cases being admitted of whom 89 died 105 of the cases admitted were Europeans all of whom recovered In the previous year there were only 1471 admissions with 49 deaths the increase is attributed to the changed conditions produced by the war The admissions for enteric fever rose from 46 (10 deaths) in 1914 to 182 (19 deaths) in 1915 35 cases occurred amongst Europeans, of whom 3 died 347 cases of pneumonia were recorded with 62 deaths 13 of the cases with 2 deaths were Europeans

Kenya and Nyanza Provinces —4687 cases of malaria were treated showing a continued increase There were 3 European cases of blackwater fever with 1 death Only 1 case of trypanosomiasis came to light Cerebro-spinal meningitis is fairly prevalent throughout the Nyanza Province 27 cases were treated with 23 deaths Dysentery showed a notable increase and totalled including 2 Europeans 651 admissions, of whom 39 died Only 2 cases of enteric fever were recorded. Cases of plague have been numerous in Nyanza Province, but figures showing the number of cases in the native Reserves are unobtainable, 33 native cases were admitted to Kisumu Hospital, and of these 29 died There were 24 admissions of smal pox during 1915 of whom 2 died *An outbreak occurred in* Nyanza Province, near the Uganda border and spread to Kisumu 614 cases were treated in the North Kavirondo district as out-patients *up to* March 31st, *1916* and *148 deaths were recorded*

Desert Zone —1666 cases of malaria were admitted to treatment, and there was one European case of blackwater fever There were 9 cases of beri beri none being fatal Admissions for dysentery numbered only 107 as compared with 373 in the previous year

According to the Blue-book, just issued, of the Zanzibar Protectorate for the year 1916, the population of the island of Zanzibar is 114,069 and that of Pemba 83,130, the density of population is estimated at 175 per square mile in Zanzibar and 219 in Pemba The birth rate (births registered) for the year 1916 was 17 3, as against 19 7 per 1000 in 1915, the death rate is not stated Measures are being taken to ensure more accurate registration of births, and it is considered probable that when the registration of all births is secured it will be found that the births equal, or may even exceed, the deaths, contrary to opinions based on the figures now available

The islands of Zanzibar and Pemba were free from any severe epidemic of disease during the year and the health of the community was fair 28 deaths from *tuberculosis* and 16 deaths from malaria were so certified These figures are not comparable with those for previous years and although they do not accurately indicate the true prevalence of these diseases only 25 per cent. of all deaths being certified by qualified medical men they are the only figures available which are at all accurate Three deaths were certified from blackwater fever No case of plague was reported during the year but there were 18 cases of small pox of which 3 were fatal There were 8 cases all fatal of cerebro-spinal meningitis and 6 deaths from tetanus occurred The number of lepers in the two islands amounts probably to about 450 Of these 107 are segregated in one settlement in Zanzibar administered by the Roman Catholic Mission under the supervision of the medical officer of health and 185 in three settlements in Pemba while the remainder are at large

BACTERIOLOGICAL RESEARCH IN NEW ZEALAND

To the Editor of THE LANCET

SIR,—Could any of your readers give me any information as to the prospects for a bacteriologist in New Zealand next year or after the war? Could a living be made out of pathological and bacteriological work alone, or would it have to be part of general medical work? Any information or source from which information can be obtained will be thankfully received by,

Yours truly,
INQUIRER (1)

Oct 13th 1917

OCT 18TH DIES SANCTI LUCÆ

THAT St. Luke was a practising physician is now generally accepted. Baring-Gould, in his "Lives of the Saints," considers that he was a slave specially trained to act as family doctor to some patrician family in accordance with the custom of the time. Dr Clapton, in his "Life of Saint Luke" considers that St Luke went through a definite medical training and graduated at the University of Antioch. Miss Stawell in an illuminating paper which she read at the last International Medical Congress in London suggests that he was well acquainted with Virgil and influenced by Virgil's writings. Some have gone so far as to suggest that St. Luke and Virgil were the same person but this is out of the question. Virgil died B.C 19 and St Luke was not born until five years later

AN UNKNOWN SCULPTOR

To the Editor of THE LANCET

SIR,—In the new building of the University of Edinburgh, just outside the entrance to the Anatomical Museum, there stood in 1892 a Grecian statue of a discobolus (?) which, according to Sir William Turner, the then professor of anatomy, was about the most perfect statue showing the muscular development. Will any of your readers kindly let me know the full particulars as regards the sculptor, and where the original is to be seen now. I do not find it figured in any of the ordinary works on Grecian sculpture.—I am, Sir, yours faithfully

Sept 10th, 1917 D. A. T

A NEW FRACTURE SUSPENSION APPARATUS

Dr J. M. Barlet, medical officer in charge of the French Hospital, Shaftesbury Avenue, has called our attention to the fact that the apparatus for slinging fractured limbs exhibited at the McCaul Hospital for Officers and described in THE LANCET of Sept. 15th has been in use for a long time at the American Red Cross Hospital of Paris, and was described and figured by Dr J. Blake, médecin-chef and director of this hospital in the *Archives de Médecine et de Pharmacie Militaires*. We have seen a reprint of Dr Blake's article published by L. Fournier, Paris, in 1916, in which are illustrated precisely the apparatus shown to our representative at the McCaul Hospital. Dr Blake writes —

> Without wishing to detract from the reputation of Miss Gasetti who has done very good work over here, I must say that she has claimed originality for much apparatus which has not only been in use for a long time but which she first saw in the service for the surgeons under whom she was serving. Of course, the treatment of fractures by suspension and traction is not at all new and consequently no one can claim it as their special method, and I do not think for this reason that this particular treatment should be given my name any more than Miss Gasetti. All I have done is simply to standardise the method by which it can be carried out systematically and with the materials which can most easily be obtainable.

CUPRASE

To the Editor of THE LANCET

SIR,—I shall be much obliged if any of your readers can inform me as to the result of use of cuprase in treatment of cancer in England.—I am, Sir, yours faithfully

Oct. 12th 1917 INQUIRER (?)

DOUBLE YELKED EGGS

To the Editor of THE LANCET

SIR,—In THE LANCET of Oct 6th a correspondent writes of an egg with two yelks. I have had this season from my poultry yard 30 double-yelked eggs of large size, necessitating the use of a wineglass (circumference 7 in.) as egg-cup

I am, Sir, yours faithfully,

Oct 15th, 1917 ANOTHER READER

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a.m. by Steward's Instruments.*)

THE LANCET Office Oct 17th, 1917

Date.	Rain fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Oct. 11	—	[illegible]	53	[illegible]	[illegible]	52	Fine
„ 12	0·19	66	53	42	[illegible]	47	Cloudy
„ 13	[illegible]	63	[illegible]	[illegible]	[illegible]	[illegible]	Cloudy
„ 14	0·11	[illegible]	53	[illegible]	[illegible]	[illegible]	Fine
„ 15	—	62	52	[illegible]	[illegible]	[illegible]	Fine
„ 16	0·63	63	55	[illegible]	[illegible]	51	Raining
„ 17	0·35	[illegible]	58	51	[illegible]	55	Raining

Other information which we have been accustomed to give in these Readings is withheld for the period of the war

The following journals, magazines, &c., have been received:—Middlesex Hospital Journal, Dublin Journal of Medical Science, Cleveland Medical Journal, Annales de l'Institut Pasteur, Archives Médicales Belges, Children's Diseases, Medical Journal of South Africa, Symons's Meteorological Magazine, Shield, Homœopathic Recorder.

Medical Diary for the ensuing Week.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W

MEETINGS OF SECTIONS

Monday Oct. 22nd.

ODONTOLOGY (Hon. Secretaries—F. N. Doubleday, J. Howard Mummery): at 8 P.M.

Inaugural Address

By the President, Mr J. H. Badcock.

Paper

Mr George Northcroft: A Short Account of a Year's Work at a Jaw Injury Centre in the London Command.

Thursday Oct. 25th.

BALNEOLOGY AND CLIMATOLOGY (Hon. Secretaries—C. W. Buckley, J. Campbell McClure): at 6 P.M.

Inaugural Address

The President, Dr Preston King (Bath): Spa Treatment.

NEUROLOGY (Hon. Secretaries—C. M. Hinds Howell, E. G. Fearnsides): at 8.30 P.M.

Inaugural Address

By the President, Dr R. Percy Smith: Aphasia in relation to Mental Disease.

Friday Oct. 26th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—A. S. Blundell Bankart, G. H. C. Pritchard, C. P. Lapage): at 4.30 P.M.

Cases

Dr Robert Hutchison: Note on Three Cases of Melæna Neonatorum treated by the Injection of Human Blood or Blood Serum.

Dr Eric Pritchard: Case for Diagnosis.

And other cases.

MEDICAL SOCIETY OF LONDON, 11, Chandos-st., Cavendish-sq., W

MONDAY.—8.30 P.M. Discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation (introduced by Mr M. Little and Major R. E. Elmslie, R.A.M.C.). There will be a Practical Demonstration with patients and appliances.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith road, W

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr Gray: Operations. Mr B. Harman: Diseases of the Eye. Dr Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear. Dr Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Pardoe: Operations.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr Gray: Operations. Mr B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose, and Ear. Dr Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr Saunders: Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose, and Ear. Mr B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr Pardoe: Operations.

ST JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester square, W.C.

TUESDAY.—4 P.M., Dr C. Kempster: X Rays. The Tube and its Control. Measurement of Dose.

THURSDAY.—5 P.M., Chesterfield Lecture:—Dr M. Dockrell: Anomalies of Pigmentation and What they Indicate.

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

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K.—King Edward VII's Hospital Cardiff Sec. of Mr J Kirk Edinburgh.

L.—Capt. C Lundie R A.M C Mr W Lock, Swindon Messrs. H K. Lewis and Co Lond Dr C E *Lea*, Manchester; Local Government Board Lond London Dermatological Society Dr A Lawson Lond. Lieut Col. J C H. Leicester I M S Dr R. A. Lambert Waterford Dr S C Lawrence Lond. Lodge Moor *Hospital*, Sheffield Clerk to the; *League* of Mercy Vice-President of

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P.—Messrs Parsons Hastings Dr C E Pring Narsapur Messrs C Pool and Co Lond Capt J *Parkinson* R.A.M C Portsmouth Lunatic Asylum Clerk *to* the Mrs Phillips Lond.

R.—Dr M J Ryan, Crumlin Lieut. T A Ross R.A.M C Capt. A.A Rutherford R.A.M C Richmond *Royal Hospital* Sec of Mr R Rastrick Kingston on *Thames*; Dr W E Reynolds Tunbridge Wells Royal Society of Medicine, Lond., Sec. of

S.—Capt H *Stobie* R.A.M C Salford Royal Hospital Sec. of Capt H J *Simson* R A.M C. Messrs W H Smith and Son *Lond.* Messrs Schaerer, Lond. Messrs. Saward Baker and Co. Lond. Smith's Advertising Agency Lond

T.—Mr J Thin Edinburgh Messrs *Taraporevala*, Sons and Co Bombay

V.—Mr C Vevers Salisbury Messrs J W Vickers and *Co.*, Lond.

W.—Mr F C Wright Moy The Welsh Calvinistic Methodists *Foreign* Missions Liverpool Sec. of Dr A Walker Oxford; Lieut A B Whylock R A.M C Mr R L. Wason *Broadclyst*; Mr P W Williams Bristol West *London* Hospital Post Graduate College Secs of; Mr A Wilson Lond

The Harveian Oration:

HARVEY'S WORK CONSIDERED IN RELATION TO SCIENTIFIC KNOWLEDGE AND UNIVERSITY EDUCATION IN HIS TIME

Delivered before the Royal College of Physicians of London on Oct 18th, 1917,

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MR. PRESIDENT, FELLOWS OF THE COLLEGE AND GENTLEMEN,—In the first place I have to thank you, Sir, for entrusting me with the most honourable duty of delivering the annual oration founded by our greatest associate, Dr William Harvey, the supreme glory of our College, whose memory we all cherish and whose work is universally regarded as the peculiar pride of English medicine In founding this oration he enjoined in the deed of gift that the orator *should exhort the Fellows of the College* to search out and study the secrets of nature by way of experiment, and for the honour of the profession to continue in mutual love and affection among themselves It was also his wish that on this occasion should be commemorated those benefactors of the College who by gifts or by their contributions to medical knowledge have forwarded the interests of this College in the course of the bygone year

RECOGNITION OF HARVEY'S WORK

Harvey's work has been justly regarded as remarkable by its great success in his own lifetime, and especially in his own country and among his colleagues in this College, where there appear to have been no discordant voices So far from it being true, as a recent British writer has ventured to say, that the only criticisms on his work were heard from his fellow countrymen, the very contrary is the truth, and, as Willis expressly says, the appearance of Harvey s book seems almost immediately to have attracted the attention of all the better intellects among the medical men of Europe The controversy on the circulation was carried on abroad rather than at home, for Harvey seems to have won over to his side all the men of his own country who by their education and acquirements might have been fitted to array themselves against him, and the first publication to deal with the question by one of Harvey's countrymen was that of Dr George Ent, who undertook to defend Harvey's teaching against the criticisms of Parisanus

A century had to elapse before the voice of criticism was heard from any British authority, and then it was the extremely able but somewhat quarrelsome anatomist Dr William Hunter, who sought to depreciate the work of Harvey by comparing it with the discovery of America by Columbus and the astronomical induction of Copernicus, disparaging Harvey's mental abilities on the ground of his failure to recognise the value of the discovery of the lacteals by Asellius, whose book was published about the same time as that of Harvey on the Circulation of the Blood (16?7) William Hunter's quarrel with his glorious brother John over the placental circulation does not show him in a very amiable or even an altogether honest light, and much as we may regret that so able an anatomist should have adopted this hypercritical attitude I think we may fairly say that his comments in no way succeeded in diminishing the glory of Harvey

CONTRIBUTIONS TO HARVEIAN LITERATURE.

Successive Harveian orators have so diligently explored the somewhat scanty literary remains that throw any light upon the life and doings of our illustrious fellow countryman that the College warmly appreciated the address by the late President Sir Thomas Barlow, who occupied this chair in October, 1916 and by his munificence had placed in the possession of the College certain documents, consisting of eight of Harvey s own letters written at the time when he accompanied the Earl of Arundel on an embassy to the Emperor Ferdinand Although these letters deal with only a short episode in the life of Harvey and throw no light whatever upon his physiological researches, they are exceedingly welcome as being contemporary accounts in his own handwriting, illustrating some at least of the difficulties that a traveller in those days met with even when forming part of the suite of a British Ambassador It is not often that a Fellow of this College enjoys the opportunity of making a benefaction which is so closely related to the personality of Harvey, but it is possible that in the much greater attention now paid to the State papers which were so long neglected, more may be found bearing upon the life of Harvey in his position at the Court of Charles I , where he undoubtedly enjoyed the favour and the personal friendship of the King

The College must acknowledge a valuable contribution to its Harveian literature in the publication of a memoir to recall the seventeenth century friendship of Finch and Baines, written by Dr Malloch, a Captain in the Canadian Army Medical Corps These two graduates of Cambridge in the seventeenth century went from Cambridge to France and thence to Padua, where the professor who lectured to them on anatomy was *Antonio* Molinetto Finch was a brother of Lord Nottingham, whose niece was the wife of Harvey, for whom he entertained the greatest veneration From Padua they went to Pisa where Finch was appointed professor of anatomy, his course of lectures including both morbid and comparative anatomy While there he examined a live torpedo (*T narce*) sent him by the Grand Duke of Tuscany He describes a "pricking sensation like that which comes when you suddenly put cold fingers to the fire," on touching the fish Later when it died he dissected it and his report is extant , it is to be issued shortly by the Historical MSS Commission edited by Mrs Lomas The friends returned to England soon after the Restoration, Baines being appointed professor of music at Gresham College, and both were unanimously elected Fellows of this College, partly no doubt on the ground of their relationship by marriage and friendship with the illustrious Harvey Soon after they received their degrees as Doctors of Physic at Cambridge and in the same month the King knighted Finch, the like honour being conferred on Baines 11 years later Finch returned to Italy and again taught anatomy at Pisa In 1665 he was appointed the King's resident at the Court of Tuscany and stayed there with Baines until the death of the Grand Duke in 1670 Finch was next sent to the Porte as English Ambassador and remained in Turkey till 1681 when Sir Thomas Baines died, and Finch brought the body home , he died shortly after, according to his epitaph—"Of sorrow at the loss of Sir Thomas Baines" They were both buried in the chapel at Christ's College, Cambridge, where in memory of their friendship Finch founded two fellowships and two scholarships

BENEFACTORS OF THE COLLEGE

Among the great benefactors of this College whose names cannot be passed over in silence are the two Hamey's, father and son Theodore Goulston, founder of the Goulston lectures, Sir Theodore Mayerne, Dr Richard Caldwell, who with John Lord Lumley founded the Lumleian lectureship, Lady Sadlier, founder of the Croonian lectureship in memory of her first husband, Dr William Croone, Dr William Wood Bradshaw, founder of the Bradshaw lecture, Mrs FitzPatrick, who founded the FitzPatrick lecture on the History of Medicine in memory of her husband Dr Thomas FitzPatrick, and *Dr Gavin Milroy*, one of the pioneers in the subject of public health who left £2000 to endow a lectureship on State Medicine and Public Health and Subjects Connected Therewith Further as announced by Sir Thomas Barlow last year, there is the foundation of the Streatfeild Research Fund endowed with £10,000 in 2½ per cent annuities given by Mrs Eliza Streatfeild for the purpose of the endowment of research, the fund being vested in the joint names of the two Royal Colleges, who act as its administrators

On Dec 16th 1916, the College received through our Fellow, Dr Malins, of Birmingham, a gift of £500 from Mr F W Mitchell to be devoted to the object of the research investigation, and treatment of tuberculosis

On Oct 26th 1916 under the will of Mrs Fanny Hertz, of 40, Lansdowne-crescent W , the College became possessed of a fine portrait of the late Dr J E Bridges, which has been hung in the hall

In addition valuable donations of books have been made to the library

A CRITICISM OF HARVEY'S VIEW

An instructive criticism of Harvey's opinions was published two years ago by the late Professor Curtis, of Columbia University[1] In Harvey's life time he was often asked by his opponents to explain the purpose of the circulation, and he was never able to give a satisfactory reply Why should the blood traverse the lungs, return to the heart be distributed to the whole of the body, and then be brought back again to the heart in order to be transmitted again through the lungs? What did the blood gain by its passage through the lungs? Harvey taught that it was ventilated or cooled there, deriving heat from the heart which was the centre of bodily heat We may wonder why Harvey, following Aristotle, should regard air as cooling fire Surely the effect of air on fire must have been known to him, and it certainly seems strange that Aristotle should have said that air keeps fire from consuming the fuel too fast, was he not familiar with a smith's furnace, and with the manufacture of charcoal by limiting the access of air? Harvey knew that air was necessary to a candle and to fire, but did not know why He accepted the doctrine of "spirits," an expression used by Aristotle, Erisistratus, and Galen, as something derived from the air and introduced into the circulation with the blood (Erisistratus) or by itself (Aristotle)

Nearly a hundred years before Harvey's time Realdus Columbus (1559), taught that air was mixed with the blood in the lungs where the transfer took place from the right to the left side of the heart But this great fact that the blood in its passage through the lungs took up air was rejected by Harvey He heads the passage "Spirits not from Air," and he quotes an experiment to show that air does not pass into the blood, as he evidently expected to see the blood frothy if this were so

Harvey maintained these views all his life and never understood the function of respiration, which is not surprising, as he was ignorant of the nature of combustion, of oxidation, of the corpuscular structure of the blood and of the function of hæmoglobin. He was unable to explain the difference in colour of arterial and venous blood, but he sought to minimise the importance of this by pointing out that both when drawn and allowed to stand become nearly the same colour and not of any great difference of either consistency or bulk He knew that during life the arterial blood in the lungs was redder and that the lungs were florid He could never explain why the fœtus could live without air and yet after birth be readily suffocated by air being excluded He always followed Aristotle in the doctrine that the heart was the primordial centre of life, and Curtis thought that Aristotle was familiar with the pulse from observing the incubating egg where the heart makes its appearance early, and to which he consequently attributed all the chief functions of the body, including the affections, feelings, senses, and the like Hence we still speak of the heart as the seat of emotion, of "a change of heart," "Unto Thee all hearts are opened," "Cleanse our hearts," &c It never occurred to Harvey to inquire into the nature of the fumes given off during expiration In Harvey's time the view was generally held that the blood is distributed to the tissues from the liver in spite of the existence of the pulmonary artery and the lungs in life being full of blood, but it is probable that medical men were blinded by the fact that after death the lungs are usually bloodless

Harvey, moreover, was not constant in his allegiance to the heart as the centre and source of the motive power of the circulation, for as early as his lecture notes of 1616 and even in his latest utterances, he regards the blood as endowed with movement, and in his treatise on Generation he asserted the primacy of the blood—"the leaping point"—the pulsating vesicle which he regarded as the first beginnings of the embryo The blood he says, is prior to its receptacle the contained to its container He maintained that the order is first the blood, second the pulsation, and third the vesicle The blood is the "first to live and the last to die" Here as Curtis says Harvey was misled by his confidence in what we call naked eye appearances and his want of better appliances It would have been logical of Harvey had he attributed the pulse and the heart beat to the "leaping blood,' but in his letter to Riolanus he says it was due to the boiling or bubbling of fermentation He thought the swelling of the blood caused by its innate heat stimulated the auricle to contract, and he located this effect just between the openings of the superior and inferior cavæ, where we now place the bundle of His The contraction of the auricles is then the cause of the contraction of the ventricles

Curtis points out the difficulty Harvey was in owing to the backward state of physics He was 14 years younger than Galileo, who was unable to explain the common pump and Harvey's discovery was made public 13 years before Torricelli's momentous work on the movement of liquids. We must therefore recognise that many of the questions which by us are readily answered were in the days of Harvey quite insoluble, but we owe him our gratitude for the enormous advances he made with the means at his disposal.

CAMBRIDGE UNIVERSITY IN THE SIXTEENTH AND SEVENTEENTH CENTURIES

It is of interest to inquire what were the opportunities afforded by Cambridge to the student who desired to study medicine, and how far it was possible for him to set out on the path of such learning as in those days would be regarded as at least preliminary to his studies

The sixteenth century was not favourable to the English Universities They suffered greatly from the religious convulsions of the period Not only were the abolition and disendowment of the religious houses causes of financial embarrassment, but sectarian considerations rather than those of character and learning were paramount in the choice of the heads of houses and professors Religious differences could not but influence the willingness of parents to send their sons to the universities and the resulting decline in numbers with the consequent loss of pupils' fees, impoverished the University exchequer, and such was the lowering of the standard of scholarship that the libraries were spoiled by the selling of so-called "useless" books

The University in the Reign of Edward VI

On the other hand, in the reign of Edward VI (1547-1553) were founded the five Regius professorships in Divinity, Civil Law, Physic, Hebrew, and Greek, each being endowed with a stipend of £40 and so far as it goes we may take the professorship of physic as some evidence that the study of medicine was not altogether ignored The first incumbent of the chair was Dr John Blythe, of King's College, an M D of Ferrara, for at this time and perhaps for a century later Cambridge men had to go abroad for instruction in strictly professional subjects John Caius left Cambridge in 1539 for Padua, where he lectured on Aristotle, in return studying "Medicine and Anatomy," which is some evidence that at Cambridge these subjects were less cultivated than Greek

In the reign of Edward VI the university attracted many students, of whom too many were absorbed in theological controversy (Ascham), moreover it was complained that the majority were mere boys, the sons of wealthy parents, who never became serious students but by their presence interfered with the attendance of a poorer class who would give up their whole time to study The prevailing spirit of the university was indolence In 1558 Caius had spoken of the disappearance of "the poor modest diligent student who rose early, lived on scanty fare and respectfully capped his seniors" Gone, too, were the dignified elders of former times, of sedate countenance and stately mien, punctilious in wearing academic dress and punctual in attendance at the disputations in the schools The undergraduates had discarded long gowns and caps their garments were gaudy, they gambled and drank, and discipline was so much relaxed that those whose misconduct led to their expulsion from one college had no difficulty in obtaining admission to another

The offices of the University became sinecures, for example, there seemed to be no objection to Ascham, the public orator of the University, living abroad while Ridley retained his Mastership of Pembroke when Bishop, at first of Rochester, and afterwards of London The Doctor's degree was taken in scarcely any faculty, and as there were no examinations and disputations had become neglected such as were given could scarcely be regarded as evidence of learning or ability If Cambridge had not sunk as low as certain German universities which Bucer condemns fo giving degrees for money yet there was much indolence among the resident Fellows, who lived like drone bees on the fat of the colleges

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[1] John G Curtis M.D LL D Harvey's Views on the Use of the Circulation of the Blood New York Columbia University Press 1915

In the new code of Edward VI, introduced in 1549, the text-books of the professor of medicine were to be Hippocrates and Galen

Foundation of Caius College

In the reign of Mary (1553–1558) there was little in the state of the University to give satisfaction to any lover of learning and the only fact which at this time can be regarded as conferring a real and permanent benefit upon the University was the foundation of the College that bears the name of Dr Caius, who was private physician to the Queen was nine times elected President of this College, and bore a professional reputation inferior to none of his contemporaries in this country

Dr Caius was a staunch Catholic, but he had travelled and seen much of men and things so that he possessed an open and tolerant mind. He had studied anatomy under Vesalius at Padua, had visited other Italian universities, and had formed the acquaintance of the chief scholars of France and Germany Being unmarried and wealthy and somewhat of a recluse he retired to Cambridge, where he became a Fellow of Gonville Hall In 1557 he obtained a license from Philip and Mary to refound the College as co-founder with Edmund Gonville and Bishop Bateman, endowing it with the manor of Croxley and Snellshall and several other properties When the College was reconstructed in 1572 it was to consist of a Master 13 Fellows, and 21 scholars, the Master being a Bachelor or Doctor of one of the three faculties

It is noteworthy as bearing upon the question of the state of medical education in Cambridge that the holders of medical Fellowships and *those only* were permitted to repair for the prosecution of their studies to the continent for says the statute Theology and Civil Law may be studied just as well here as there and it is fair to infer that medical science could not These travelling Fellows were required to go to a 'good school, preference being given to "Padua, Bologna, Monte Pulciano and Paris"

Neglect of Learning

On the accession of Elizabeth the fresh instructions to the Commission for the Reorganisation and Reformation of the Universities followed closely those (1549) in the reign of Edward VI. but with the notable omission of the clause for the foundation of a Chair of Medicine and one of Civil Law It is not necessary to recount the troubles and differences which occurred at Caius College owing to the personal unpopularity of Caius who was disliked by the majority of the Fellows and who retaliated by showing his contempt for their indifference to learning and their lax conduct the manners of the students of this period leaving much to be desired

We have seen that a generation before the study of Greek was pursued with much success at Cambridge, but it had become so neglected that eminent scions of the University like Whitgift and Walter Haddon were ignorant of it and Giordano Bruno who visited England and Oxford in 1582 complains that the Oxford undergraduate drank too much beer," while his seniors were 'pedantic and stupid,' but perhaps it is unfair to assume that these faults extended to the sister University Companionable behaviour the capacity to sit long at table after dinner and supper were more helpful to a degree than reputation acquired in the schools or any display of ability there evoked

The attendance upon the lectures of the University professors fell off no doubt in part in consequence of the development of the college system undergraduates preferring to get such instruction as they desired in the class-rooms of their college tutors, but if to the college system may be not unfairly attributed the decay of professorial teaching at Oxford and Cambridge it may on the other hand be credited with having preserved these institutions from such stains on morals and manners as still mar the reputation of the chief German universities

When Caius was in Italy he was a zealous disciple of Giovanni di Monte (1508–1552), who was the first modern to teach medicine at the bedside which he did at the hospital of St Francis Unfortunately Caius did nothing to transplant this method to his native country, and it was at least two centuries before clinical teaching was practised even in a rudimentary fashion in British hospitals

Francis Glisson Regius Professor of Physic at Cambridge

The career of Francis Glisson, a former President of this College, illustrates to some extent the state of medical education at Cambridge where he was Regius professor of physic from 1636 until his death in 1677 He entered Caius College in 1617, graduated B A. in 1621 and M A in 1624 M D in 1634 He lectured at first on normal, morbid, and comparative anatomy, and in 1640 he gave the Goulstonian lectures of this College Up to this date—that is, four years after being appointed Regius professor—he lived in Cambridge but in 1640 he took a house in Colchester, where he 'soon obtained much practice" and where he continued to live until after the siege of that city, when he became much impoverished and moved to London. Here he took a house in New street, in the parish of St Bride's, and resided there up to his death in 1677 He was President of this College in 1667–8–9 In 1675 the University obliged him to appoint Dr Brady as his deputy at Cambridge, but the fact that he was non resident for over 40 years of his incumbency of the professorship may not unfairly be taken to indicate the little interest felt in medical education at Cambridge.

As is well known Glisson was an energetic student of his profession and published many valuable monographs, especially that on Rickets and on the Anatomy of the Liver, by the latter his name has been preserved and is familiar to all medical students from Glisson's capsule" applied to its external fibrous sheath His portrait painted at the age of seventy five is in the possession of this College

WEBSTER'S 'EXAMINATION OF ACADEMIES"

One looks to Webster's book, the "Examination of Academies'[2] for a criticism of the work of the University at or about Harvey's time, but it is disappointing Webster was evidently a fanatical puritan who found fault with the Universities because they professed to train men for the ministry whereby they are said to fill them with vain knowledge He expressed doubt whether the knowledge of Greek and Hebrew could in any way aid the right understanding of the Gospel and thought that only the Spirit of Christ could convey this information. He praised such mystics as Jacob Boehme, he believed in the existence of a Heavenly dialect which was what John heard and God used in speaking to Adam, that animals probably communicated with one another by it

He objected to the Aristotelian philosophy and preferred to it the teaching of the Rosicrucians, and that of our 'learned countryman' Dr Fludde. He condemned the medical profession for adhering to what he calls "ignorant wicked and blind Pagans' for neglecting magic and cabalistic science and that "great book" the 'Macrocosm' of Paracelsus He quoted with approval the saying 'For the Lord hath created the physician not the schools," and he condemned the neglect of that laudable, excellent and profitable science' of physiognomy, the neglect of the science of Celestial signatures, and the study of natural dreams

Coming to more reasonable criticism he found fault with the uniformity of method followed in teaching by the slothful performance of the Acts there being only four in the year to these being conducted in Latin which tended to obscurity and to the neglect of our mother *tongue* He says that the Romans used Latin and prohibited Greek"(!) while the Greeks wrote in their native language. He thinks too much importance is assigned to the opinions of the ancients and that Lord Bacon has indicated a better method than that of the scholastic philosophy, that physics and chemistry should be taught by laboratories as well as libraries

While there is much in this with which a modern would agree the criticism on the whole is peevish and unreasonable and suggests nothing that has any direct bearing upon the improvement of medical education

Webster seems to have had small right to pose as the critic of the Universities for it is at least doubtful whether he was at any time a member of either of them. He speaks of himself as educated at Cambridge but no trace of him can be found in the University registers according to the Dictionary of National Biography He was ordained in 1632 curate of Kildwick in Craven in 1634 and Master of the Grammar School at Clitheroe in 1643. In the Civil War he seems to have taken the Parliamentary side and was surgeon and chaplain to a regiment in the Parliamentary army, becoming a Nonconformist and being intruded as vicar of Mitton in Yorkshire and also at *All Hallows in Lombard-street* He acquired some fame as a preacher but later on he fell into discredit, for his books were seized in 1657 and he gave up the ministry Later in life he studied metallurgy and practised medicine He died at Clitheroe in 1682

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[2] Academiarum Examen, London, 156

"THE VINDICATION OF ACADEMIES"

Webster's book was answered by John Wilkins and Seth Ward in the "Vindication of Academies"[3] In this defence of the Universities the authors complained that Webster, and even Hobbes, were ignorant of the present state of the Universities and of the grounds of those arts and sciences which they pretended to improve Surprise is expressed that the Universities should be condemned as rigidly bound to Aristotle and accused of ignoring the modern advances in knowledge which have modified his teaching On the contrary, all modern ideas were freely discussed—the anatomical and magnetical philosophy and the Copernican astronomy That both in the public lectures and private classes of the Universities those things which they are accused of neglecting are taught and are well learnt Particular exception was taken to the criticism which maintained that University teaching is not only useless but harmful to candidates for the ministry, for such academic knowledge "*added to the gifts of grace must be only helpful* and not injurious"

On the other hand, Webster's praise of the Rosicrucians, of Jacob Boehme and of judicial astrology show him to be a credulous fanatic Further, Webster is accused of plagiarism, of stealing whole sheets of Gassendi's book, and of being wholly dependent upon those translations to which he had access for his knowledge of foreign writers The accusation that the study of chemistry was neglected was denied and with some reason it was pointed out that, the practice of medicine being an art which is based on observation and experience, new discoveries in anatomy do not always involve alterations in practice equal to that in theory, but have often confirmed and established practical rules

Webster's objection to the use of the term "divines" as blasphemous is treated as ridiculous, but it is conceded that "theologian" is better, and the complaint of the use of the Scriptures in scholastic exercises is inconsistent with the desire expressed that Christian principles should be introduced into the schools of physical learning Moderns may agree with the contention that students should be taught to use their hands in laboratory work, but there is force in the objection that the wishes of parents must be respected, and that in the sixteenth and seventeenth centuries it was not thought desirable to teach young gentlemen natural philosophy, chemistry agriculture, or mechanics but they should be trained to be rational and graceful speakers and fitted to move in polite society

Webster's critic John Wilkins, the Bishop of Chester, was one of the most learned and estimable men of that age He adhered to the Parliamentary side in the Civil War, and was Warden of Wadham College in 1648 He had the reputation of being a wise, beneficent, and tolerant Head of the College, and he may be justly called the founder of the Royal Society The weekly meetings of the London philosophers when held in Oxford took place in the Warden's lodgings Although siding with the Commonwealth he preserved the University from the ignorant commanders and soldiers who, unrestrained, would have demolished all places and persons that pretended to learning He was afterwards appointed Master of Trinity College, Cambridge where he was greatly honoured and loved but at the Restoration he was deprived of this post, as it had been long promised to Henry Ferne He was made Prebend of York and Dean of Ripon He procured the incorporation of the Royal Society in 1662 becoming its first secretary He lost his library and valuable MSS in the great Fire of London He was made Bishop of Chester in 1668 and died in 1672 He is generally supposed to have written the preface to Seth Ward's "Vindiciae Academiarum"

'AN ARK FOR SUBMARINE NAVIGATION'

Bishop Wilkins was interested in many things, and Professor Joly of Trinity College Dublin has recently drawn attention[4] to his little volume entitled 'Mathematical Magic," in which one chapter is headed "Concerning the Possibility of Framing an Ark for Submarine Navigation, the Difficulties and Conveniences of such a Contrivance"

This invention seems to have been produced by a Dutchman named Cornelius Drebbel, who was born in Alkmaar in Holland in 1572, and came to England in 1604, where he secured the favour of James I, and was given lodgings in Eltham Palace He left England at the invitation of the Emperor of Germany, but was involved in the misfortunes of the Thirty Years War, when he was thrown into prison Through the intermediation of James I his release was procured, and he returned to England, where he remained until his death in 1634 He appears to have enjoyed the esteem of his contemporaries, especially of the Hon. Robert Boyle, who refers to him as a "deservedly famous mechanician and chymist"

The great interest to us of Drebbel's work is that he appears to have been much ahead of his contemporaries in appreciating the function of respiration It is said that he built a ship in which a man could navigate under water from Westminster to Greenwich In the boat "a person could see under the surface of the water and without candlelight as much as he needed to read in the Bible or any other book" This remarkable ship was in 1645 yet to be seen lying in the Thames or London river (C van der Oonde). Boyle accepted the testimony of what he called "a few credible persons" that Drebbel could enable men to continue under water without suffocation or even inconvenience for as he says, it is "not the whole body of the air but a certain quintessence or spirituous part of it that makes it fit for respiration which being spent the remaining grosser body of the air is unable to cherish the vital frame" So that besides *the mechanical contrivance of his vessel he had*—

> "a chemical liquor which he accounted the chief secret of his submarine invention, for when from time to time he perceived that the finer and purer part of the air was consumed or overclogged by the respirations and steams of those who went in his ship he would, by unstopping the vessel full of his liquor, speedily restore to the troubled air such a proportion of vital parts as would make it again for a good while fit for respiration, whether by dissipating or precipitating the grosser exhalations or by some other intelligible way"

According to Boyle, Drebbel kept the nature of the liquor a close secret and justified his own inquiry because the man and his invention were so extraordinary, all the more so as it was 150 years before the discovery of oxygen by Priestley and Lavoisier and of the part played by it in respiration It was not until 1681 that John Mayow published his conclusion that respiration and combustion are analogous phenomena Drebbel must have discovered some means for removing from respired air its poisonous properties as by drawing it through lime water to absorb the carbon dioxide, by which it would be possible to prolong the voyage, and the ventilation of the boat may have been assisted by pipes going to the surface the air being drawn in by fans or pumps It is certain that the bishop realised the difficulty presented by respiration in the problem of submarine navigation and that he fully appreciated the work of Drebbel in overcoming this part of the problem

While Harvey failed to grasp the function of respiration and set aside the suggestions that had been made by others under the crude form of the action of "spirits" on the blood it is quite plain that these contemporaries of Harvey allowed their minds to run farther than his on the chemical side of these questions and were closer than he to understand the nature of the physiological questions involved His failure in this respect was probably due to his ignorance of chemistry, which Aubrey says he was wont to undervalue and speak against those who practised its doctrines

BISHOP WARD —OTHER CRITICISMS OF THE UNIVERSITIES

Seth Ward successively Bishop of Exeter and Salisbury was a distinguished mathematician, mathematical lecturer at the University of Oxford and afterwards Savilian professor of astronomy in 1649 He entered as a Fellow Commoner at Wadham when John Wilkins was warden and when the fame of the college attracted many men of eminence These gatherings probably constituted the nucleus of the Royal Society After the Restoration he was made successively Prebend Dean and Bishop of Exeter He was subsequently translated to Salisbury and became Chancellor of the Order of the Garter His controversies with Hobbes and Webste caused him some trouble He is the reputed author of the "Vindiciæ Academiarum," in which he replied to the criticisms of the Universities which Webster and Hobbes had published in the ' Examen Academiarum "

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[3] Vindiciae Academiarum, Oxford 1654

[4] The Origin of the Submarine Blackwood's Magazine July 1917

Hobbes the author of "The Leviathan" (1588–1679), was a somewhat bitter critic of the Universities in his day, particularly on the ground of their adherence to the Aristotelian philosophy and physics He says, "The philosophy schools through all the universities of Christendom grounded upon certain texts of Aristotle," and these institutions were merely useful as a handmaid to the Roman religion , they rendered no knowledge of the subordinate and secondary causes of natural events or "physiques," but merely empty words Thus they said that bodies sank because they are heavy or because they desire to be at rest He also criticised their teaching of the civil law, but although there was doubtless much with which to find fault, he says nothing about the art of medicine or the way in which it was taught

Dr C A. Mercier[5] is of opinion that Paracelsus and van Helmont had much to do with preparing the ground for the reception of Harvey's new doctrine He thinks that by their bold challenge to the Aristotelian doctrines they rendered it possible for Harvey to state his novel opinions without being regarded as uttering blasphemy, but he is almost as severe a critic of Oxford and Cambridge as was Hobbes 200 years earlier He quotes a statement of Averroes that Aristotle is "the perfection of truth, that his understanding attained the utmost limit of human ability," and that ' it may truly be said of him that he was created and given to the world by Divine Providence, in order that we might see in him how much it is possible for a man to know " This tribute may seem exaggerated to the non academic mind but "it would not be considered at all exaggerated in the University of Oxford even to day " He gives no facts whatever in support of this charge However there may be something in what he says, for had not Paracelsus and van Helmont shown that Aristotle could be contradicted without calling down fire from heaven, Vesalius might not have had the courage to publish his discovery of the non porosity of the cardiac septum

Teaching of Medicine at Cambridge in Harvey s Time

It is not easy to trace any evidence of the teaching of medicine at Cambridge in the time of Harvey In Vol III of Venn s ' Biographical History of Gonville and Caius College ' (p 253) we find the following —

"It will be observed that no reference has been made in the above sketch to any such officer as a medical lecturer The fact is that though the College had for centuries enjoyed a medical reputation, no trace of any systematic instruction in the subject can be discovered until very recent times Indeed, the earliest lecturer recorded by tradition is the late Sir George Paget, who is known to have held the office from about 1848 until he ceased to be a Fellow in 1852. Since that date such lecturers have been regularly appointed The increased scope of the work, owing to the great addition to the number of students, was recognised in 1881, when the title was changed from Medical Lecturer to Lecturer in Natural Sciences and Director of Medical Studies That some instruction, however, in the shape of what we should now call anatomical demonstration was occasionally given in the College can be proved by one or two interesting facts In the first place, in the register of the parish of St Michael—the College lies in the parish—there is an entry of burial under the date April 6th, 1601, of ' Mr Hutton, the anatomyr of Kev's College ' "

Venn took it for granted at first that this gentleman s connexion with anatomy was of the active kind, and that we had here evidence of a very early demonstrator in the College But it now seems certain that he played the part of the subject, for it is recorded that Dr Grimston, "one of our Fellows " made a dissection in the College just four days before That similar instruction was carried on 25 years later seems plain from the statement of Dr Joseph Mede, that he attended anatomy lectures in "our College " In the register of Great St. Mary's the parish in which the schools, now absorbed into the public library were situated, several such entries are found The earliest of these is in 1566 when it is recorded that "John Figgen mad anotomy at the scholes and buried here, the 12th March ' This was during the residence of Dr Caius, seven years before his death

Professor A Macalister informed Dr Venn that this is the earliest contemporary record known to him of the actual performance of human anatomy in England Again in 1628 there is an entry that "John Smith, a prisoner at the castle that was anatomised, was buried " In a note, Dr Venn says that it perhaps accounts for the prefix "Mr " to Hutton s name, a title at that time confined by University usage to Masters of Arts and Fellow Commoners, in the direction of Dr Caius that the burial of such anatomised bodies should be ' orderly and reverential "

In the same volume (p 47) we find the following "On the same day (Patent Roll, August 1st, 1564) is added the Royal License for the purchase of the houses from Trinity A new and very important concession was included in this license It was a formal grant from the Queen (Elizabeth) of bodies for dissection to the effect that they and their successors shall have for ever, at their free discretion and will, without the contradiction of anyone, two human bodies for anatomy, condemned by law for theft or homicide and dying in the town castle or county of Cambridge And that they may freely dissect them at their will, with the reverence due to the human body, for the increase of medical knowledge, and this without any payment ' Dr Caius gave careful directions in his statutes concerning these dissections, desiring that 'every year during the winter there shall be spent by the students of our College, on anatomy and on the worthy burial of the dissected bodies at S Michael's 26/8 The president and everyone residing in College to attend the burial of the remains with as much respect and ceremony as if it were the body of some more dignified person , and this on account of the advantage they have thus received And the Master shall see that the students of medicine do not treat the body with any lack of respect or humanity ' It is to be feared that very inadequate use was made of this privilege "

In his "Advancement of Learning" Bacon mentions that the study of medicine was based upon the use of dead bodies for dissection

It is further evidence that dissection was practised in Cambridge in the seventeenth century that Sir Charles Scarburgh (1616–1694), who was a Fellow of Caius College, published a manual on dissection (' Syllabus Musculorum "), but there appears to have been no dissecting room, public or private until after the passing of the Anatomy Act, 1832 Science and its votaries, indeed found no permanent home at Cambridge in the time of Harvey Gilbert of Colchester, who as Bacon says had made a philosophy out of a load stone, had been long removed to London, where as Royal physician he enjoyed favour and good fame, and died in 1603 Physiology as a subject did not exist, and the knowledge of the functions of the organs apart from their structure, was elementary and very often fundamentally erroneous In spite of Bacon s commendation, morbid anatomy was entirely neglected perhaps because, as he pointed out, how much more difficult was this study than that of normal anatomy, the latter being presumably uniform in all healthy subjects, while the former presented endless variety Its difficulty undoubtedly hindered any advancement, for it is not until the second half of the nineteenth century when fairly complete post-mortem examinations were made on the bodies of all persons dying in hospitals, that the subject became familiar, and morbid appearances grew to be generally known to hospital physicians and were appreciated to a less extent from students

Impulse given by Harvey to British Physiology

There can be no doubt that in the *sixteenth and* seventeenth centuries those Cambridge men who desired to study scientific medicine could not do so at home, and resorted to the Italian universities to study under such great masters as Vesalius Fallopius, and Eustachius, whose success was rather in descriptive anatomy than in physiology Harvey s work was of great importance because although he added no new facts, he placed a new interpretation on what had been more or less common knowledge for 2000 years and stimulated an advance in medicine which has continued up to the present time. This advance was mainly due to his employment of vivisection, by which method he laid the foundations of physiology and thereby of the progress of medicine Physiology has been rightly called the Institutes of Medicine which must march hand in hand with pathology and be its guide Its progress depends upon the advance of many sciences especially of chemistry in that department which we call organic or physiological This was a new science 40 years ago and has been built up within the lives of many of us It has opened out a wide prospect and gives promise of revolutionising medical study

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[5] Paracelsus and van Helmont: Proc of Royal Soc. of Med 1915 vol ix Section of History of Medicine.

The impulse that the work of Harvey gave to British physiology is shown by naming those who followed him in the next 100 years

Thomas Wharton (1614–73), physician to St Thomas's Hospital studied at Cambridge and Oxford, discoverer of the submaxillary gland and author of Adenographia (1656)

George Joyliffe (1627–58), M D Cantab , F R C P , discoverer of the lymph ducts

Francis Glisson (1597–1677), M D Cantab , Fellow and President of this College author of famous monographs on Rickets and the *Anatomy of the Liver*

Thomas Willis (1621–95), M D Oxon , F R S , F R C P , recognised saccharine diabetes and described the Anatomy of the Brain (the circle of Willis)

Richard Lower (1631–91), M D Oxon , F R S , F R C P , performed transfusion

Edward Tyson (1650–1708) and Samuel Collins (1618–1710) were *comparative anatomists*

Clopton Havers described the Haversian canals

William Cowper or Cooper (1666–1759) described "Cowper's" glands

ADVANCE OF MEDICINE IN SECOND HALF OF NINETEENTH CENTURY

But it cannot be claimed that at Cambridge or elsewhere there was any real progress in medical education Here and there men of genius made discoveries, but they were not aided by any organisation, either inside or outside the university or medical school Men like the Hunters did their work at their own expense, and for many years to come even the teaching of anatomy owed most to what was done in private schools

The best that can be said for British medical education is that it was based upon some genuine knowledge of practical anatomy and bedside acquaintance with diseases But it was not until the second half of the nineteenth century that a true spirit of reform entered into the schools In no place was this more manifest than at Cambridge Although it is still necessary, and probably always will be, for the Cambridge student to seek clinical experience elsewhere, he may find at Cambridge all that he desires in laboratory opportunities and, under due limitations, for clinical research

If Cambridge has proved itself worthy of its association with the illustrious Harvey this is equally true of the great hospital of St Bartholomew's, with which perhaps his professional connexion is more generally recognised Harvey left Cambridge apparently as soon as he had completed his arts curriculum, taking no part of his medical education there, and although he returned there for his degree, he owes to Italy the instruction that opened the way for his great discoveries

HARVEY AS PHYSICIAN TO ST BARTHOLOMEW'S HOSPITAL

Of his labours as a physician at St Bartholomew's we know little, and what records remain do not impress us very favourably with the work done in those days by those who held such appointments as that of Harvey When he was originally appointed he was only obliged to attend once a week, and he was never formally required to visit the wards The number of patients seen in the hospital must have been very small, for as late as 1749 the numbers are given as—in patients, male 16, female 15, out-patients male 50 female 50, each week , and there is no reason to believe that a hundred years earlier they were more numerous

Apparently the patients were obliged to come to the doctor and not the doctor to the patients as one of the rules says —

"It is the duty of the matron and sisters to complain to the doctor if any poor lurk in the house and do not come to him at his sittings or take the medicine he prescribes, but cast it away and abuse it

It is difficult for us to understand the position of such a man as Harvey holding a post which, to us seems scarcely likely to afford him any return in the way of useful experience The salary was inconsiderable some £20 a year with an allowance for fuel and "livery," but it is possible that the appointment indirectly led to a certain amount of practice for undoubtedly he made money by his profession, although Willis suggests that his brother Eliab employed the ' small capital" accumulated by him during his active years of practice and before the breaking out of the Civil War to such good account that he actually died a rich man

The period during which he may have earned a considerable professional income must have been from about 1607 to 1630

HARVEY'S LATER YEARS HIS GIFT TO THE COLLEGE.

After the latter date, when he went abroad with the Duke of Lenox it is doubtful whether he ever had much opportunity for practice In 1633 he went with Charles to Scotland, whence he followed him to Oxford (1642) and in 1646, on returning to London, he resigned all his appointments, and as his wife was dead he took up his residence with his brothers Eliab and Daniel It was then that Harvey felt himself fully justified in making over his paternal estate, then worth £56 per annum, to this College as a free gift during his life and as a provision for the objects of which this annual oration forms part

He died at the advanced age of 80 on June 3rd, 1657, and I cannot do better than repeat the words of Willis —

"So lived, so died one of the great men whom God in virtue of his eternal laws bids to appear on earth from time to time, to enlighten and to ennoble mankind "

THE TREATMENT OF

TRENCH FEET AND ALLIED CONDITIONS BY BIER'S METHOD OF PASSIVE HYPERÆMIA

BY PHILIP TURNER M S LOND , F R C S ENG ,
MAJOR, R.A.M C

(A Paper read before a Medico Chirurgical Society March, 1917)

DURING and after a spell of severe weather we have had large numbers of cases, as doubtless all hospitals have had diagnosed as "trench feet," "frost-bite of feet," and, of course, "I C T ' feet This has given me the opportunity of trying Bier's method of treatment by passive congestion in a considerable series of cases, the results of which I propose to bring before this meeting Though I have had no access to statistics I feel sure that the relative number of these cases is less than it was either in the winter of 1915–16 or 1914–15 This is doubtless due to the improved prophylactic measures taken, and it is rather suggestive that large numbers of cases come from certain units, while others appear to be almost free Though prophylactic measures have been attended with so much success, there is, so far as I know, no very satisfactory method of treating cases which have once developed, and I hope that the results obtained by the method of passive congestion will lead to this method being given a more prolonged and thorough trial

A memorandum on the "Etiology, Prophylaxis, and Treatment of Trench Foot," by Médecin Majors Raymond and Parisot, was circulated to the various hospitals, and a good many of the members of this society will doubtless have read it This memorandum is of great interest and I shall refer to it on several occasions The actual treatment recommended here consists in the application of compresses of sterile gauze soaked in a solution of powdered camphor and sodium borate in boiled water This is covered with cotton wool and impermeable tissue We have had no cases here in which this treatment has been started before arrival, and we have had no opportunity of starting it here so I have no practical experience of it , but I must say that I should have expected these cases to do better with a method in which the feet were kept dry rather than with one in which wet compresses were employed

Causation

Before speaking about the treatment of trench foot it will be necessary to say something about the causation of this condition and to consider the pathological changes which actually occur This subject was investigated by Professor Lorrain Smith, Professor James Ritchie, and Dr James Dawson[1] who succeeded, by submitting them to cold, wet, and constriction of the limbs, in producing a similar condition in rabbits Their conclusions may be summed up by saying that they consider the condition to be essentially one of inflammation brought about by direct action of cold on the tissues, and that histological examination of the affected parts showed that the chief changes took place in the blood-vessels They regard the influence of infecting micro-organisms as *unimportant*, and found that when these were present they did not seem to be the cause of the inflammatory process They also point out that the essential difference between trench foot and true frost-bite is that in the latter the direct action of severe cold leads to the complete destruction of the vitality of more or less extensive masses of tissue, while in the former the effect of cold and wet, combined with certain factors which impede the circulation in the extremities, is to produce this inflammatory reaction

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[1] THE LANCET 1915 ii 595.

The view of the pathology taken by Médecin Majors Raymond and Parisot in the memorandum already mentioned is very different They regard trench foot as caused by a special infection of the foot and claim to have isolated the infecting agent, a mould, *Scopulariopsis koningii*, which is found in the mud of the trenches, and which penetrates the feet at the site of the grooves at the side of the nails or through excoriations of the skin They compare trench foot with Madura foot and regard cold as only of secondary importance in its causation. The suggestion that trench foot is due to a specific infection is I believe, quite new, and so far we have had no opportunity of searching for the presence of this mould. Captain G Richardson, R.A.M.C, has, however in a number of cases of trench foot in which there were sloughs, blisters or gangrenous areas, examined the discharge bacteriologically, and in all cases found only the usual organisms one would expect to find in such lesions with ulceration of the skin. I do not think that many will agree with Majors Parisot and Raymond that cold and wet are of only minor importance Indeed, one may go so far as to say that the great majority of medical men who have had charge of these cases, while admitting the importance of other factors, would regard prolonged exposure to cold and wet as the most essential cause of trench foot As regards there being a special infection by a mould, one can express no definite opinion at present but must wait further experiments and researches which will doubtless be made to test the correctness of this theory

At present, then we may accept the account of the pathology by Professor Lorrain Smith, Professor Ritchie, and Dr Dawson but in one respect I am not quite in agreement with their explanation—viz., as to the importance of the part taken by micro-organisms, especially in the more severe cases In the milder cases where the symptoms are limited to swelling congestion and alterations in sensation, the changes produced by micro-organisms are doubtless unimportant but in the more severe cases in which one finds septic blisters sloughs, and ulcers often surrounded by inflamed areas or actual cellulitis and sometimes gangrenous areas of considerable extent and some depth, the part taken by micro-organisms in their production must surely be of the greatest importance The discharge from such cases has often a distinctly foul odour, and it was in the discharge from such cases that Captain Richardson found organisms present such as are usually present in or on the skin. Another point as showing the importance of organisms in these cases is that tetanus has occurred with sufficient frequency in cases of trench feet as to render it desirable that the usual prophylactic dose of serum should be injected in all cases whether the skin is broken or not.

My view of the pathology of trench foot may be summed up as follows The condition is primarily caused by prolonged exposure to wet and cold, combined with other factors which impede the circulation These set up the inflammatory changes described by Professor Lorrain Smith. The vitality of the tissues is lowered to such an extent by this that septic organisms already present in or on the skin possibly in fissures or excoriations are enabled to set up more or less severe septic inflammatory processes resulting in the development of blisters sloughs, and gangrenous areas Needless to say this view as to the part played by micro-organisms is derived entirely from clinical observations but some such explanation appears to be necessary to explain the more severe cases This is a point of considerable importance, for if it is granted that septic organisms play an important part in the process even though that part is secondary and indirect their intervention must be taken into account in whatever line of treatment is adopted

Classification

It will be convenient here to facilitate further reference, to arbitrarily divide cases of trench feet into three groups (*a*) Mild, where the skin is unbroken and the symptoms are swelling and "congestion" (really a bluish discoloration due to hæmorrhagic infiltration of the superficial tissues) combined with sensory disturbances (*b*) Moderate, where blisters, or small sloughs, or black and apparently gangrenous areas are present, and the sensory disturbances are more marked (*c*) Severe, where there are extensive sloughs ulcers, or gangrenous areas of considerable extent involving, perhaps, several toes

With regard to this grouping of cases it may be pointed out that the changes in trench foot are usually superficial, and that appearances are often very deceptive It is no uncommon thing to see a patient who appears to have one or more toes completely gangrenous, or to have large patches of apparently deep and spreading gangrene on the dorsum or side of the foot, and yet on treatment such areas shrivel up and separate leaving scarcely a scar underneath Improvement sometimes takes place very quickly, and in some of these apparently severe cases the freedom from scarring on recovery shows that the deeper layers of the epidermis cannot have been damaged beyond recovery, even though when first seen the condition may have looked so serious as to suggest that amputation of one or more toes would be necessary I do not of course mean to say that gangrene of the toes and massive gangrene of the tissues of the foot never occur or that amputation is never called for, but I am sure that this is quite rare When extensive sloughing and gangrene are present I believe that this is largely due to a virulent secondary infection and that early treatment has been impossible

Method of Treatment

The question of prophylaxis is of the very greatest importance, but we are now concerned only with the treatment and not the prevention of trench foot. A consideration of the above points will show that treatment should be directed to (*a*) cleansing of the foot and the prevention of secondary infections and (*b*) the treatment of the original inflammatory changes and also of any secondary infection which may have developed.

(*a*) *Cleansing of the foot* —The importance of this is very rightly insisted upon by Major Parisot and Major Raymond, who recommend "a careful cleansing, almost a surgical cleansing" with special soft soap containing camphor and sodium borate The method I have adopted has been as follows. The feet are cleaned with ordinary soap and water and the nails are also cut and cleaned. The feet are then painted over with a solution of 1 per cent picric acid in methylated spirit, and this application is repeated at first daily and later on alternate days This solution which I have used and recommended from the early days of the war for the purpose of sterilising the skin in military surgery is most efficient. It penetrates to the deeper layers of the epidermis and never causes dermatitis or irritation of the skin. Having been treated in this way the feet are wrapped in sterile gauze and left exposed to the air until the patient finds that they are more comfortable when covered by the bed clothes

(*b*) *Treatment of the inflammatory processes* —Bier's treatment by passive hyperæmia is recognised as a satisfactory method of treating many conditions where there is a subacute or chronic inflammation It is also very often successful in the treatment of chilblains. These considerations led me to try Bier's treatment for trench feet. It is applied as follows —

As soon as the cleansing process has been carried out a constricting bandage is applied just above the knee A Martin's elastic bandage cut in half provides a bandage of about the right length and strength If this is not available, an elastic crepe bandage may be used, but these are not so satisfactory as they stretch, and the pressure exerted may diminish or even disappear after a few hours For the first day the bandage is kept on for 18 hours. It is then removed and reapplied after an interval of six hours It is then again applied and on the second and succeeding days is left on for 22 hours in every 24 The bandage should in all cases be applied just tightly enough to impede the venous return, but on no account must it obstruct the arterial supply In many cases there will be no alteration in the appearance of the limb but in some there will be noticed a slight increase in the swelling or the leg below the bandage may feel slightly warmer as the result of the congestion The treatment should be painless and any complaint of pain—not slight discomfort—is an indication for the removal of the bandage I have only had one case in which this was necessary, and even here the bandage was subsequently reapplied without any further complaint of pain

Results

It will now be as well to describe the effect of the treatment It has been pointed out that sometimes there is a temporary slight swelling of the leg below the bandage This soon disappears, and in slight and moderate cases the swelling of the foot has usually quite disappeared in 24 or 48 hours In severe cases it may persist for longer Pain improves rapidly, and in 24 hours has either disappeared or has markedly diminished Anæsthesia improves steadily, but not so rapidly In a moderate case with anæsthesia of all the toes and of the greater part of the dorsum of the foot the sensation will probably be normal in four days, with the exception of blisters and gangrenous spots where the sensation is naturally still deficient In cases of moderate severity blisters and the gangrenous areas shrivel, dry up, and eventually separate, leaving an unbroken delicate pink skin underneath This process is very interesting, and not infrequently there is an extensive desquamation of the skin of the affected part, sometimes of practically the whole foot In extensive cases, after the separation of dried blisters, gangrenous spots, and epithelial scales, there is left a surface of thin pink, soft skin resembling a baby's foot This is naturally very tender, and though the patient can walk in soft shoes, boots cannot be worn until the thin skin has become hardened and accustomed to pressure I cannot help regarding this desquamation and separation of dried gangrenous areas as part of the natural process of cure in these cases of moderate severity, and I think that the treatment by passive hyperæmia considerably accelerates the process The following is an example of a case in which this occurred

Rifleman W F C Admitted Jan 27th, 1917, discharged March 10th, 1917 On admission both feet were affected about equally There was severe *burning pain, especially at night*, and anæsthesia of all toes and about half of the dorsum and sole of both feet. The third and fourth toes of the right foot were very discoloured and appeared gangrenous, as was also the little toe of the left foot There were several other small black spots *There was slight œdema* and also congestion of both feet The patient was unable to walk Bier's treatment commenced on Jan 27th Pain disappeared in 24 hours, also the swelling of the right foot, but the œdema of the left foot persisted for four or five days By Feb 4th both feet were practically normal, and *dried up* sloughs were beginning to separate from the toes The bandages were omitted and the patient got up There was no swelling, but some pain on walking On Feb 5th he was kept in bed, and the bandages were reapplied with immediate relief, and as he had a cold with pyrexia he was kept in bed till the 10th He then got up again and walked well without pain The gangrenous spots separated on Feb 12th, leaving unbroken skin beneath From that date the patient did very well There was extensive desquamation of the congested parts of both feet, so that on the anterior half of the dorsum, including all the toes, the skin, though unbroken, was thin, pink, and very tender He could walk quite well in soft shoes, but was unable to wear boots As it would be a long time before the skin would be sufficiently hardened to enable him to wear boots, and as his age was only 16, he was evacuated to England Owing, however, to another attack of pyrexia he was not evacuated until March 10th

In slight cases, as soon as pain, swelling, and anæsthesia have disappeared, usually after four or five days, the patient is allowed to walk in soft shoes Then after two days boots are worn at first for half an hour daily This period is gradually increased until the boots can be worn for two hours without discomfort when the man is discharged to the convalescent depôt. In "moderate" cases the procedure is the same The patient is allowed to walk as soon as possible in shoes, and is then gradually accustomed to boots A longer period is, however, required before walking is possible and before boots can be worn A large proportion of these cases (I should estimate about 50 per cent) have improved sufficiently to be discharged to the convalescent depôt but in many of the men, especially where there has been extensive blistering or many gangrenous spots with much desquamation, the feet are so tender that several weeks must elapse before they return to even light duty, rendering evacuation necessary When the patients are sufficiently convalescent to get up the Bier's treatment is still continued, the bandage being removed when they get up and replaced when they go to bed, so that the bandage is applied for about 18 hours out of the 24 "Severe" cases always require evacuation to England, for, even under the most favourable circumstances, it must be many weeks before these men are fit to return to even light duty These cases have also been treated in the same way, but owing to pressure on the hospital accommodation it has not been possible to keep any under observation for more than two weeks Even in this time, however, there has been rapid improvement Swelling, pain, and anæsthesia diminish, sloughs and gangrenous areas rapidly dry up, lines of demarcation form, granulating surfaces assume a more healthy appearance, and surrounding areas of inflammation subside Thus even in these severe cases the symptoms rapidly diminish and the natural process of cure is hastened

It may be asked whether the *improvement in cases treated* by Bier's method is really due to the Bier's treatment and not to the rest, general treatment, and picric acid application That it is due to the former is proved by the results in some cases where one foot has been severely, the other only slightly, affected The bandage has only in these cases been tried for the severely affected foot, while the other treatment has been applied equally to both In such cases one nearly always finds that the foot treated by Bier's method is in a couple of days better than the other more *slightly affected* foot, which has not been so treated In conclusion, I would point out that the treatment is simple and painless and requires no special apparatus beyond the bandage

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ON THE
TREATMENT OF A SERIES OF RECENTLY INFLICTED WAR WOUNDS WITH FLAVINE

(A REPORT TO THE MEDICAL RESEARCH COMMITTEE)

By HAMILTON DRUMMOND, F R C S EDIN
AND
J W McNEE, M D GLASG ,
CAPTAINS ROYAL ARMY MEDICAL CORPS
With an Introduction by
Surgeon General Sir ANTHONY BOWLBY

INTRODUCTION

THE report by Captain Drummond and Captain McNee is the result of a very careful study of the effect of flavine in recent wounds It is evident that the number *of cases dealt* with is not sufficient to enable final conclusions to be drawn, but some of the observations are sufficiently definite for the formation of very definite opinions, and I am in complete accord with those expressed by the authors

In the first place, it appears evident that flavine does not sterilise recent wounds, and that various bacteria *grow freely* in wounds treated with it

Secondly, it appears to cause a very superficial necrosis, of the formation of a fibrinous membrane *if applied* in the strength of 1 in 1000

Thirdly, in spite of the presence of bacteria there is a notable absence of inflammation and of *septic* infections, and in the *cases observed* there were no bad examples of gas gangrene, although anaerobic organisms were present in many wounds in large numbers

Fourthly, healing by granulation is very slow, and the growth of granulations is evidently checked by the presence of flavine

As far as the present *series* of operations goes it is clear that it does not bear out some of the claims made for flavine as a bactericidal agent or as *to* its *harmlessness* to the tissue cells But it appears to be a useful application in the form of gauze soaked in the solution when used as a first dressing to large open wounds, and it *seems to* limit the power for harm of the pathogenic bacteria and to prevent the inflammation of the tissues which is usually caused by bacterial invasion Further observation of many *more* cases is required to establish its value in the treatment of recent wounds

(Signed) ANTHONY BOWLBY
Surgeon General

G H Q July 25th 1917

REPORT

Towards the end of April a sample of flavine was placed at our disposal by Surgeon General Sir Anthony Bowlby, to be tested in the treatment of recently inflicted wounds at the Front. The test has been carried out partly in a casualty clearing station and partly in an 'advanced surgical centre,' situated about four miles behind the lines Almost all the cases were operated upon and the treatment with flavine commenced within twelve hours after the injury, in many instances indeed, only four or five hours had elapsed before the wounds were dealt with All the wounds were therefore in the pre-suppurative stage, in contrast with other tests reported from home It has been possible, through the courtesy of Lieutenant-Colonel Frankau commanding officer of the clearing station, to keep a number of the cases under observation for several weeks thus greatly aiding the observation on the process of healing in the wounds and the investigation from the bacteriological side

Strength of solution employed—The flavine was at first employed in a strength of 1 in 1000, the dilution being made in normal saline solution in which the powder is readily soluble. This strength was used both for the primary stages and for the subsequent treatment by irrigation or otherwise. This routine was soon given up however, as it was found that equally good results ensued if the use of 1 in 1000 solution for the first dressing was followed by the employment of a solution of 1 in 5000 for all subsequent applications. In some cases, also, where the Carrel method of irrigation was being used the strength of the solution was further reduced to 1 in 10 000

Number of cases and number of wounds treated with flavine—In this test a series of 70 cases have been under treatment but as many of the men had multiple injuries, the series comprises over 120 wounds In some cases as many as six serious wounds were present in the same patient The vast majority of the wounds were caused by the fragments of shells or bombs only about eight injuries from rifle or machine-gun bullets being encountered while the test was in progress

Classification of the wounds—The wounds may be divided into three classes both for easy reference, and because the method of treatment differed in each class (1) Flesh wounds including all injuries to soft parts without damage to bone, (2) compound fractures, (3) miscellaneous wounds of special parts—abdomen chest head, and joints

Surgical methods adopted—These naturally depended on the type of injury met with Long incisions, with free excision of damaged muscle and fascia, must be regarded as a cardinal part of all operative treatment in recent wounds no matter what subsequent methods are employed. After this preliminary surgical treatment the wounds treated with flavine were dealt with in the following ways —

1 Primary suture —This method was employed in 30 cases, all being wounds of the soft parts alone In the majority of these the damaged muscle removed at operation was examined bacteriologically and shown to be infected Fragments of cloth, and dirt were also commonly removed from the track of the wound

2. Drainage by tube or gauze strip followed by secondary suture —This was carried out in 10 cases

3. The Carrel method of intermittent irrigation —The perforated tubes were irrigated with the flavine solution every four or six hours This method was chiefly employed for compound fractures and deep or extensive muscle injuries.

4 Gauze packing in open wounds.—This was found very useful in the treatment of many extensive wounds where the Carrel method was not readily applicable for instance in certain types of compound fracture and in amputation stumps where complete closure was impossible.

The gauze packing soaked in flavine could be left *in situ* for several days without changing the dressing

Results of Treatment with Flavine

1 *Cases treated by primary suture*—Wounds treated by excision of the infected and damaged tissue followed by primary suture gave excellent results In a series of 30 wounds of this kind only two broke down. In a test such as this it may be well to give brief details of the two unsuccessful cases

CASE A.—A fragment of shell passed through the thigh from side to side fracturing the femur and causing much comminution of the bone At the operation four and a half hours after the injury many completely detached fragments of bone were removed, along with much damaged muscle The wounds were then thoroughly washed out with 1 in 1000 flavine solution and completely closed up on each side of the thigh with silkworm gut On the second day after the operation the patient looked ill and was febrile On examination the wounded thigh was swollen and the skin showed a patch of discoloration near the wound A second operation was thereupon performed, the sutures on the outer side of the thigh being released, allowing a quantity of brownish fluid, which contained abundant anaerobic bacilli, to escape Four Carrel tubes were inserted into various parts of the wound and six hourly irrigation with flavine was commenced No spreading gas gangrene developed and the subsequent course of this case was uneventful

CASE B —This was a case of severe multiple wounds of the left thigh and buttock There was an entry wound 2 inches above the natal fold, close to the ischio-rectal fossa on the left side, but no exit wound. At operation the missile was seen to have tracked downwards into the thigh The popliteal space was swollen and on making incision the missile, a fragment of shell of considerable size and embedded in cloth was removed. The track of the missile was laid open in its whole course down the thigh, revealing much damage to the hamstring muscles All possible damaged muscle was resected and after washing well with 1 in 1000 flavine the wound was completely sutured without drainage Three days later the wound gave way in its middle third and grumous fluid containing many organisms escaped Under an anæsthetic the wound was widely opened up in its middle third, to show areas of necrotic muscle which had been left behind at the first operation. Free drainage was ensured and the patient was able to be evacuated to the base a few days later, doing well.

In contrast to these two unsuccessful results, one of the 28 successes may be quoted to show in what variety of wounds primary suture was possible.

CASE C —A soldier was admitted with a severe shell wound of the right buttock The entrance wound was near the sacrum and the exit below and behind the great trochanter The track measured 8 inches from end to end At the operation six hours after injury, the track was found to pass through the fibres of the gluteus maximus in all its extent The track was laid open, and several fragments of cloth with much damaged muscle, were removed After arresting hæmorrhage the wound was washed with 1 in 1000 flavine and completely sutured The wound was dressed on the third day and was perfectly sound. The patient was evacuated to the base at the end of a week, sent to England on the ninth day and after removal of the stitches on the thirteenth day was able to walk about

This case is especially interesting, as such wounds of the buttock often develop gas gangrene. The fragments of cloth and pieces of damaged muscle removed at operation were both infected with anaerobic bacilli.

2. *Cases treated by drainage followed by secondary suture*—Secondary suture gave good results in all the 10 cases in which it was adopted. It may be remarked here that in several instances the secondary suture was completed while the wounds were far from being bacteriologically sterile but no untoward result followed. The edges of the skin, however in wounds which have at first been left open and stitched up later do not heal as in primary suture Healing takes place more slowly and a considerable induration can always be felt along the track of the wounds The stitches, moreover must be kept in position much longer than usual and we have found that if they are removed before about the fourteenth day the edges are liable to give way

3 *Open wounds treated with flavine*—In this group are included both wounds treated by the Carrel method and those simply packed with gauze soaked in the antiseptic In open wounds which form the major portion of our series, observations on the rate of healing and on the bacterial flora have been most readily carried out and they have therefore received considerable attention The typical progress of an open wound treated either by the Carrel method or by the gauze packing may now be described, taking as a concrete example a flesh wound of the thigh where a considerable area of skin and muscle have been blown away so that the wound was left open to granulate. On removal of the first dressing on the third day the wound, except for being deeply stained with flavine, has undergone no alteration in its appearance whatever, and resembles an injury only a few hours old. All signs of inflammation are wanting and there is no pain, redness swelling or induration in the tissues around The secretion from the wound is minimal in amount and suppuration is absent The complete absence of suppuration, even

in wounds where films show abundant organisms to be present, is a very noteworthy feature in wounds under treatment with flavine When dressed again at the end of a week the skin edges are found clean cut, no epithelial growth having taken place from the edges The floor of the wound has by this time become covered by a closely adherent membrane, only detached with difficulty from the underlying structures This yellow pellicle forms over whatever tissue is exposed in the wound, whether it be muscle or subcutaneous fat Its histological structure will be referred to later The wound from this time onward, if flavine be continued, remains in a stationary dried up condition, showing neither signs of inflammation nor of repair Even after a fortnight or more only small and scanty granulations can be discovered by peeling off the membrane which covers them

It is obviously improper treatment to continue the application of flavine until such a stage is reached and experience has shown that a wound heals with much greater rapidity if the flavine be stopped after three or four days in the case of small wounds, and after about a week in the case of severe wounds or compound fracture If at this period eusol be substituted the yellow membrane comes away piecemeal within a day or two, and granulations appear more luxuriantly In a very few days later growth of epithelium is well established at the edges of the wound The wound in short, changes its character entirely Abundant discharge of purulent nature, containing always a great number of organisms makes its appearance, and rapid healing occurs

4 *Wounds of the chest, abdomen head and joints* —These cases have formed such a small part of our series that no conclusions of value for this report can be drawn from them It is of interest, however to note that quite considerable quantities of flavine solution can be left in the abdominal or thoracic cavities without inducing the least toxic effect

Histology of Wounds Treated with Flavine

Portions of tissue have been removed from the edges or floor of seven open wounds under treatment with flavine and examined histologically These examinations were made 2, 2½ 3, 8 8 and 11 days after treatment had begun

Up to three days the skin edges were sharply cut and unaltered histologically The floor of the wounds showed a thin layer of fibre and polymorphonuclear leucocytes, covering a narrow zone of necrosed muscle fibres Between the dead fibres polymorphonuclear leucocytes were fairly abundant and in one case many large Gram positive bacilli of the usual anaerobic type were present in the same situation and within the necrotic fibres themselves

The material taken from a wound five days old showed a thicker covering layer of fibrin and leucocytes, with a few dead muscle fibres, embedded in it This layer, which is bright yellow in colour before fixation, is obviously from its structure composed chiefly of fibrin, although it does not give perfectly the characteristic reaction with Weigert's stain No evidence of granulation tissue production was observed, and the skin at the edge showed no epithelial proliferation

The tissue from two cases taken on the eighth day gave information of considerable interest In one case wedges of skin and subcutaneous tissue were removed from open wounds on the abdominal wall and on the forearm, in which muscular tissue was involved Both of these wounds were in a dried up condition, and showed to the naked eye no signs of inflammation or repair This was borne out under the microscope, epithelial proliferation from the edges of the skin being minimal in amount The floor of the wounds was covered by the usual membrane of fibrin and leucocytes, and in one wound there was distinct evidence of early granulation tissue production in subcutaneous fat In the other case a portion of the vastus externus muscle exposed in a large wound of the thigh communicating with a compound fracture, was removed for examination The whole floor of this wound was covered with a very dense yellow membrane firmly adherent to the deeper structures In the segment removed for examination this membrane was 2 millimetres in thickness It was also noted that the subcutaneous fat underlying the membrane at one part of the wound had been stained bright yellow by the antiseptic dye while the muscle remained unaffected Below the membrane in this case granulation tissue production was evident throughout, forming a comparatively thin layer The edge of the skin in this wound was examined

The tissue taken from the wound eleven days old showed no new features Granulation tissue production was well established below the yellow pellicle, but there was little epithelial ingrowth from the edges of the wound

Bacteriology of the Wounds

Except in the cases where primary suture was adopted most of the wounds were examined from day to day As a routine films were made and stained by Gram's method and both aerobic and anaerobic cultures were set up to amplify and control the observations in films In this way a fairly complete examination of 90 wounds has been made.

A small number of the wounds remained sterile from the outset These were cases in which it had been possible to remove all damaged and infected tissue at the time of operation, and all of these wounds were soon closed by secondary suture It may be said at once, however, that in the great majority of the wounds no sterilisation in the bacteriological sense was brought about by the application of flavine The wounds tended to pass through as regards their bacterial flora the stages now well recognised in wounds of this war Infection by anaerobic bacilli was very common in the early stages, but tended to pass off at the end of about a week, except in the case of compound fractures, where the infection generally continued as long as the wounds remained under observation After a few days invasion of the wounds by streptococci was almost the rule, accompanying, and often gradually replacing, the anaerobic infection Later, generally after a week or longer, infection with a variety of other organisms was commonly met with, especially staphylococci, *B pyocyaneus*, and a variety of short coliform bacilli The coliform bacilli require special notice because of their frequency and also because of their marked resistance to flavine, as borne out by test-tube experiments (*vide infra*)

The broad conclusion arrived at from the bacteriological observations was that the type of infection in wounds treated with flavine in no way differed from that met with in cases where other treatments had been employed

A point brought out incidentally was the fundamental difference between what may be termed "surgically sterile" as distinct from "bacteriologically sterile" wounds Complete bacteriological sterility was rarely obtained, yet the patients were obviously doing well and the wounds showed no signs of local or spreading inflammation In several instances secondary suture was adopted with complete success while numbers of organisms were still recognisable in the field of the microscope Cultures moreover, showed that these organisms were still viable

"*In vitro*" *Experiments with Flavine*

A few test tube experiments, using various organisms freshly isolated in culture from wounds in our series have been carried out by Captain J Shaw Dunn, R A M C, to control these done elsewhere The tests were made in tubes containing 4 5 c c of glucose broth and 0 5 c c of varying dilutions of flavine Each tube was inoculated with 0 1 c c of a 24 hours glucose broth culture of the organism under examination This technique, with minor modifications, served for the examination of both aerobic and anaerobic organisms The following results were obtained —

1 *Staphylococcus aureus* —Vigorous growth in tube containing 1 in 80 000 flavine No living organisms in tube containing 1 in 10 000 flavine

2 *Streptococcus pyogenes* —No visible growth in tube containing 1 in 100 000 flavine No living organisms in tube containing 1 in 100 000 flavine

3 *Streptococcus fæcalis* —Visible growth in tube containing 1 in 100 000 flavine No living organisms in tube containing 1 in 50 000 flavine

4 *B perfringens* two strains The same technique was adopted here as in the other tests except that the tubes were incubated in an "anaerobic can" in the absence of oxygen Vigorous growth in tube containing 1 in 200 000 flavine No living organisms in tube containing 1 in 100 000 flavine

5 *Coliform bacilli* four similar strains from different cases Vigorous growth in tube containing 1 in 400 flavine Living organisms recovered from tube containing 1 in 100 flavine

A second series of tests in which the dilutions of flavine were made in fresh human serum, were carried out with one strain of a coliform bacillus The technique was briefly as follows —

0·45 c c of fresh unheated human serum was placed in each of a series of small tubes, and 0·05 c c of varying dilutions of flavine were added, so as to give final dilutions in the serum of 1 in 100 up to 1 in 80,000 To each tube was then added 0 025 c c of a 24 hours' glucose broth culture of the bacillus The tubes were then incubated for 24 hours, at the end of which time the organism had grown abundantly in a control tube containing serum alone

Result Vigorous growth in the 1 in 20,000 dilution in serum, no living organisms recovered by subculture from the dilution of 1 in 8000 in serum

This set of experiments bears out the enhancing power of serum on the action of flavine and also shows that of all the organisms tested coliform bacilli are the most resistant to the action of the antiseptic

A further test was made to ascertain whether the enhancing power of serum on flavine was lasting or the reverse

Five small tubes, each containing 0 45 c c of fresh human serum, were made up to 0 5 c c with flavine, so as to give a dilution in each tube of 1 in 5000 flavine These tubes were inoculated with a coliform bacillus at varying intervals up to 90 hours after the flavine and serum were mixed together Subcultures were made from each tube 24 hours after the culture of the organism had been added No growth was obtained in any of the tubes, showing that the mixture of flavine and serum had retained its antiseptic power for at least 90 hours

Conclusions

1. Flavine appears to have many advantages as a *primary* treatment of recent war wounds Among the advantages are —(*a*) The absence of all toxicity, even in large wounds (*b*) The prevention of suppuration and of spreading sepsis, as brought out in our series of test cases (*c*) The primary dressing need not be changed for two or three days, and is then easily and painlessly removed This may be of great advantage during severe fighting where rapid evacuation of wounded from front to base is required without unnecessary dressing of the wounds (*d*) The wounds are not inflamed or painful, and the surrounding skin is never irritated

2. Emphasis must be laid on the fact that excision of damaged tissue and mechanical cleaning of the wound are necessary preliminaries to the use of flavine

3 Flavine cannot be classed as a success in the treatment of the *later stages* of war wounds The wounds tend to assume a stagnant condition, during which the processes of repair are almost in abeyance After a few days when the danger of gas gangrene and of spreading sepsis have to a great extent passed off, flavine should be stopped and another treatment adopted.

4 In the majority of cases war wounds are not rendered bacteriologically sterile even by the prolonged use of flavine

5 Test-tube experiments carried out with organisms isolated from actual wounds bear out the strong antiseptic properties of flavine, and their enhancement in the presence of serum Coliform bacilli, which are a common infection in the later stages of wounds, are much more resistant to the action of the antiseptic in test-tube experiments than any of the other types of organism examined in this way

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Colonel R J Blackham, C I E, D S O, A M S, at present serving as A.D M S of a division in France, was elected a member of the Society of Apothecaries of London at the annual meeting of the society held at the Apothecaries Hall Blackfriars, on Oct 9th

Dr George Wallace Eustace of Arundel has been placed on the commission of the peace for West Sussex He is at present on active service in France and he served in the South African War He is a former mayor of Arundel

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC —Founder's Day is to be celebrated at the National Hospital Queen square, London, W C, on Friday next, Nov 2nd, when the wards will be open to inspection from 3 to 6 P M

ETHER-OIL ANÆSTHESIA BY THE RECTUM

BY H M PAGE, F R C S ENG,
ANÆSTHETIST TO THE KING GEORGE HOSPITAL, GUY'S AND THE WEST LONDON HOSPITALS

With a Note by

G B MOWER WHITE, M B, M S LOND, F R C S ENG,
SURGEON TO THE KING GEORGE HOSPITAL, GREAT NORTHERN CENTRAL HOSPITAL, ETC

WE owe this method of producing anæsthesia to Dr James T Gwathmey,[1] of New York Before the beginning of the war I had anæsthetised a good many cases by this method and had come to rely on it entirely for operations on the thyroid gland if hyperthyroidism was present Since 1914 I have used it for the wounded in cases of plastic face and jaw operations Some fatalities have occurred in this particular class of case under the ordinary methods of anæsthesia I therefore suggest the more frequent use of Gwathmey's method, which is simple, easy, and, I believe, safe

Description of Method

The apparatus required is very simple An indiarubber catheter, a funnel a medicine measure, an empty medicine bottle with a cork, to shake the mixture in—this shaking must be done forcibly for two minutes The following is the technique I employ —

A simple wash-out of the bowel an hour or two before the injection, in addition to the usual preliminary dose of medicine, is an advantage, but can be dispensed with if necessary A subcutaneous injection of morphia gr ¼, atropine gr 1/100, is given half an hour before the time fixed for the ether-oil injection I have used the paraldehyde rectal injections, but prefer morphia subcutaneously From 20 to 25 minutes before the time of operation 6 ounces of a mixture containing two parts of ether to one of oil (ether 4 ounces, oil 2 ounces) are slowly run into the rectum Six minutes are spent in making this injection The india rubber catheter is passed 3 or 4 inches into the rectum, never more than 4 inches

When the operation is finished the remaining ether-oil must be washed out, using a large rectal tube and funnel The wash out must be done thoroughly and methodically, as on this depends the rapidity with which the patient recovers consciousness I do the washing out, unless I have shown a nurse how to do it The tube is gradually passed up and as much as possible of the remaining ether-oil mixture withdrawn The tube is then drawn down again near the anus, and some water or saline is run in and siphoned off This is repeated gradually higher up the bowel until no oil or ether can be detected in the returning fluid, when the tube is gradually withdrawn lower and 3 ounces of olive oil are passed in and left there The temperature of the water or saline must not be above that of the rectum—in fact, only the chill off

Following the use of this technique there have been no rectal, pulmonary, or gastric sequelæ The return of consciousness is not delayed when the washing out is done satisfactorily

Soldiers, unless they are very ill, are resistant to the effects of ether, and there is also the loss of ether in the breath, from the venous blood as it passes through the lungs, so that to procure a full anæsthesia in a reasonable time it is often necessary to administer a little ether with a Clover's apparatus and allow some re breathing, if preferred, ether by the open method or some A C E can be given If it has not been possible to give the injection 20 minutes before the time for operating some anæsthetic vapour by the mouth will certainly be necessary for induction to prevent delay After surgical anæsthesia has been produced nothing more will be required by the mouth in a large number of cases The anæsthesia obtained is quiet and even and the laryngeal reflex is present In some cases an occasional whiff of chloroform must be given in the usual way with a Junker's apparatus but of course much less chloroform is required than with the usual methods, and there is the continual even stimulation from the ether absorbed from the rectum, so that with ordinary care there is practically no increased danger

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[1] THE LANCET 1913, i. 1756

Cases in which the Method has been Employed

I have used this method in face, mouth, and nasal operations 17 times, they all made uninterrupted recoveries, and there were no rectal or other sequelæ This is not a large number of cases in itself, but I have used ether oil rectal anæsthesia in 47 cases altogether The operations in which I have used this method are as follows Plastic operations on the face, operations on the jaw, radical cure of antral disease, œsophagoscopy, bronchoscopy, laryngoscopy, removal of nasal septum, cholecystotomy, cholecystectomy, gastrostomy, gastroenterostomy with partial gastrectomy, exophthalmic goitre, laminectomy, trephining, appendicectomy, amputation of the breast

All these 45 cases recovered from the operation except 2 These 2 cases were laminectomies, they died some time after the operation from ascending myelitis In 2 of my early cases, in which a 75 per cent solution of ether was used, there were rectal irritation, mucus, and a slight trace of blood lasting a day or two In another case there was looseness of the bowel for a couple of days, since then I have never used a stronger solution than 2 to 1, as recommended above

One of the cases of appendicectomy was in a lady aged 75 She had lately suffered from influenza with pulmonary complications, her heart was weak and dilated Acute appendicitis—appendicectomy—uninterrupted recovery

Another, a boy, aged 11, with perforated appendix. Appendicectomy I gave him 5 ounces of equal parts of ether and olive oil He made an uninterrupted recovery

The patient in one case of amputation of the breast was a big, very fat, elderly woman She was suffering from asthma and chronic bronchitis The complete operation was done Recovery was uninterrupted There was no effect whatever on her pulmonary condition

I should say that post-anæsthetic vomiting is less frequent than with other methods Pain is not complained of during injection when a 2 to 1 solution is used I do not know if it would be safe to put the patient into the Trendelenburg position when using this method I have never done so, and I have not seen any reference to this position in the American literature on the subject Mr Mower White, who operated in the majority of the plastic cases, has kindly added the following note

Note by MR MOWER WHITE

Mr Page has asked me to add a few remarks to what he has written concerning the administration of ether per rectum I have seen this form of anæsthesia used in a considerable number of cases and for many different operations All the patients have been adults The results have been uniformly good both as regards the condition of the patient during the operation and as regards the absence of untoward symptoms afterwards

In operations upon the face and mouth, to which Mr Page refers, there can be no doubt that ether administered per rectum is a far safer anæsthetic than is chloroform vapour by inhalation Certainly in those cases upon which I have operated we have not had a moment's anxiety with regard to the condition of the patient, while at the same time the degree of anæsthesia has been sufficient for all that was required In these operations, too, the absence of apparatus for delivering an anæsthetic confers greater freedom upon the actions of the surgeon and is a welcome relief Most of the operations have occupied an hour, some even an hour and a half, and the anæsthesia has remained good until the end. Many of the patients were sick once after the operation but I have seen no case of repeated vomiting

As regards the rectum, no trouble has arisen in any of my patients, and there has been no evidence of irritation of the rectal or colic mucous membrane I attribute this absence of symptoms to the fact that a very thorough washing out of the bowel has been practised as soon as possible after the operation is finished The lavage is continued until the water returns almost clear certainly free from the odour of ether and from visible globules of oil

In a few instances I have recommended this mode of anæsthesia for patients suffering from chronic bronchitis and needing operations These patients took the anæsthetic well and were none the worse for it

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A CARTILAGE PROSTHESIS FOR THE EYE

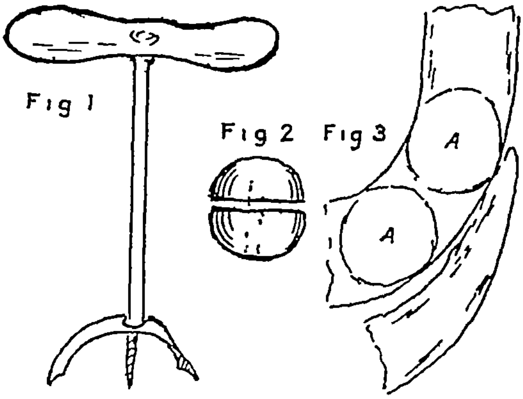
BY J L AYMARD, M R C S, L R.C P LOND,
CAPTAIN, R A M C (TEMP) QUEEN'S HOSPITAL FOR FACIAL INJURIES FROGNAL, SIDCUP KENT

THE failure of the artificial eye from a cosmetic point of view depends upon two main factors, immobility and depression The former condition is due to the absence of a mass of tissue fitting inside the artificial glass casing and the latter to the fact that a sphere has been replaced by a shell

However much ophthalmic surgeons may differ as to the value of metal or glass prosthetic globes, plastic surgeons in general would, I feel confident, agree with me that there can be no question as to the superiority of the use of natural tissues With this object in view, I am now employing spheres constructed from the costal cartilage

Since my investigations regarding the vascularity of cartilage I can, with the utmost confidence, understand how cartilage transferred rapidly establishes fresh communications with the blood-vessels in its new vicinity and becomes fixed *to the capsule in a recent enucleation or to the surrounding* tissues in older standing cases

Fig 3 illustrates the portion, A A, of the eighth costal cartilage from which two hemispheres are trephined. These (Fig 2) are then either pegged with cartilage or fixed with catgut.



In primary enucleations, provided there is no sepsis the surgeon places the cartilage sphere *inside* Tenon's capsule and sutures the same He then proceeds to suture the conjunctiva Whilst the ophthalmic surgeon is enucleating the eye the second surgeon can, with practice, produce the sphere of cartilage

Whether cartilage spheres can be introduced into a septic eye socket or not remains to be seen, but from experience in other directions I am inclined to think that it is worthy of extensive trial as the resisting power of cartilage to sepsis in nasal cases is remarkable

Fig 1 gives a diagrammatic view of the trephine I use The object of this trephine is not only to cut each hemisphere circular but to shape it at the same time *The* two points of the trephine have cutting edges each made to cut in the same direction, the central pin is fixed and gimlet-shaped

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MEMORIAL TO THE LATE MR CHAUNCY PUZEY, F R C S —On Oct 10th, the anniversary of his death a memorial service was held in the chapel of the *David Lewis Northern Hospital* Liverpool, when a tablet was unveiled and a chancel rail dedicated to the memory of the late Mr *Chauncy Puzey by the Rev* J Bell Cox who paid a warm tribute to the work and influence of the deceased The tablet was inscribed

> To the memory of Chauncy Puzey F R C S Surgeon and Consulting Surgeon to this Hospital 1875-1916. This tablet is erected by the committee and his colleagues in recognition of his long valued and devoted services Died October 10th 1916"

Medical Societies.

MEDICAL SOCIETY OF LONDON

Modern Artificial Limbs and their Influence upon Methods of Amputation

A MEETING of this society was held on Oct 22nd, Sir StClair Thomson, the President, being in the chair

Mr E Muirhead Little and Major R C Elmslie, R A.M C, introduced a discussion on Modern Artificial Limbs and their Influence upon Methods of Amputation

Major Elmslie said that when the hospital for fitting artificial limbs was started at Roehampton in the summer of 1915 the supply was inadequate and the types available were by no means perfect , The limbs demonstrated represented a series of typical examples of the work at Roehampton The arms represented an immense mechanical advance upon the very elementary types which were available at the beginning of the war The function of an artificial leg was to give good stability in standing and walking and a natural gait Hence the important points were the way in which weight was borne upon the leg, the way in which the leg was built to secure stability, and the way in which the knee and ankle were controlled A stump might take its bearing either upon its termination (end bearing) or upon the bony prominences around the proximal joint In general, end bearing either complete or partial might be expected when the bone section was through cancellous bone, when the bone was covered with thick skin and muscle or fascia, and when the skin over the stump was itself naturally adapted to weight-bearing The type of end bearing stump was, of course, that given by Syme's amputation The other bearings used should be those upon the tuberosity of the ischium and upon the head of the tibia Although a certain amount of bearing might be taken by fitting the stump tightly and so getting circumferential pressure upon it, yet this must not be trusted to any great extent, as by this method the skin was apt to be stretched tightly over the end of the stump and if the scar was terminal or the skin thin this might result in ulceration Major Elmslie then described the points in the fitting of a limb for amputation through the thigh This limb was generally suspended by a sling over the shoulders the lower end of which was attached to the leg below the knee, either directly or by passing over a pulley In this way it acted as a knee-extending mechanism In short stumps however a pelvic band was necessary to enable the stump to remain securely in the bucket and to control the limb The mechanism used to extend the knee was of two sorts The older one was a spring, either of rubber or of steel, which should act in such a way that the knee was only extended by it from the right-angled position If it acted from a position of greater flexion than this it would prevent the man from sitting comfortably with a flexed knee The second method was the sling from the shoulders which pulled upon the front of the leg piece when the shoulders were raised or when the weight of the swinging limb was put upon it thus extending the knee. The stops which limited the movement of the knee in both directions must be so strong as to be unbreakable even when the whole weight of the body exerted its maximum leverage upon them In the ankle mechanism the present limbs almost all differed from the Anglesey leg in that the movement allowed at the ankle joint was small in range (only about 20 to 30°) and this movement was stopped by the compression of springs, usually of rubber but sometimes of steel The small range of movement was found not to interfere with walking Correct building of the limb was essential if stability was to be secured Two points were essential (1) The axis of the knee-joint must be behind the line which represented the centre of gravity of the body when it was erect and (2) the foot must be mounted in slight equinus (20°) and must be prevented from reaching the right-angled position The routine material for the construction of artificial legs was still willow and as a rule the thigh and leg pieces were constructed of single pieces of wood appropriately hollowed out the joints being made of steel It was not an advantage to have very lax joints in an artificial leg As a rule the joints were lined with a bushing of leather, by adjusting which they could be made stiffer Hip-joint amputations were fitted with a leather cup which entirely enclosed the stump fitting it very accurately This was attached to the trunk by a steel pelvic band, and to it was attached the limb, by a hinge joint on the outer side and on the inner side by a steel piece which runs around on a quadrant situated upon the under surface of the leather cup It was possible by placing the hip-joint far forward and the knee-joint far back to fit a limb which was stable with both hip and knee joints free, but it was customary to fit locks to both these joints, so that the man might walk with one or other free In amputations through the knee the lower end of the stump was larger than the part higher up, therefore the front of the bucket must be cut away and filled in by a piece of leather or else an entire leather thigh-piece must be used In either case the leg piece was attached by outside steel joints For amputations below the knee a wooden bucket was accurately fitted to the head of the tibia and below the patella The weight should be borne upon these points, although in exceptional cases it might be necessary to fit a leather thigh bucket reaching right up to the tuberosity of the ischium and taking a bearing there In short stumps a partial end bearing could often be taken by stretching a shelf across the bucket at the right level In some cases it was difficult to stop the stump rubbing up and down in the bucket during movement at the knee joint, but this could be got over by fixing a leather socket closely to the stump and inserting this into the bucket As a rule the leg was suspended around the thigh by a leather corset with lateral steels hinged at the knee When a man had worn a leg for some time, however he could often dispense with this, having the leg attached only by a narrow band of leather fastening above the knee, to which the leg was hung by lateral straps If this was done the foot should not be adjusted with too much equinus, as the equinus position of the foot tended to force the knee into a hyperextended position A Syme stump was fitted into a leather bucket strengthened with steels on either side and in front and preferably lacing behind The ankle joint worked against two rubber buffers as in the other types of leg It was possible however to replace this mechanism by a tendon stop at the back and an anterior accumulator and this method must be used in Pirogoff and Chopart stumps Many other materials besides willow were now being tried, such as leather, plied wood, wood shavings and glue, celluloid and duralumin A type of leg for a thigh amputation which would not give way under the weight of the body when the knee was flexed, had been recently invented but was still on its trial In general an artificial arm should be designed to take the place of the left arm in work and must be adapted to the particular needs of the man. Movements could be transmitted to it by tension being put upon cords In this way three pulls could be exerted (1) by expansion of the chest, (2) by rounding the shoulders, (3) by elevation of the shoulder These cords could be used to activate the elbow joint to lock and unlock this joint, and to work a mechanical hand or appliance used in its place An arm for amputation above the elbow should be attached by a harness which passed over the shoulder but this should limit the shoulder movements as little as possible The arm and forearm parts should be connected at the elbow by a hinge joint with a lock, which fixed it securely and prevented movement in either direction The alignment of the elbow joint need not be the true one as it was more useful for it to flex more across the chest In *the mechanical arm* the elbow was flexed by a cord usually activated by the pull given by rounding the shoulders In this arm the forearm piece had the shape of the natural arm and ended in a wrist plate to which the hand or other appliance could be attached In a *worker's arm* the forearm was represented by a skeleton of steel, usually a rod to which appliances could be attached If a man who had such an arm for work wished to have a nice looking forearm and hand he could adjust a show piece representing these over the skeleton These two types of arm the mechanical and the worker's could be combined by making the elbow mechanical but using a skeleton forearm For amputations below the elbow a simple socket was used connected to an arm corset by lateral steel joints, or in the case of long stumps by lateral leather straps In a new arm made by Williams of Swansea the elbow was kept permanently slightly flexed the socket was fitted to the forearm stump and held on by a continuation upwards of firm leather which laced around the condyles of the humerus, giving a very secure hold for a working arm In wrist amputations and other amputations low down in the forearm it was important to preserve the movements of pronation and supination It might be possible to do this by omitting the steel joints at the elbow, or the movement could be secured by the pronation arm made by Hobbs, in which ball and socket joints allowed the forearm socket to rotate upon the elbow For working men appliances fitted to the wrist-plate were generally more useful than a hand The number of appliances made might be divided into the following classes (1) Simple hooks, rings, and grips, without movement, (2) similar appliances in which there is mobility in one or more directions representing wrist movements, (3) grips opened or closed by the pull of a cord from the shoulder Many of the appliances invented by Adams, Hobbs, and Anderson would be seen on the arms worn by the men present The hand was not so useful in mechanical work as the appliance, but for men in professional work a good hand was an essential In most cases the hand supplied was a simple one, with a spring grip to the thumb and often with the ring and little fingers curved into a hook and reinforced for carrying But mechanical hands were possible and useful for certain men The first essential in a mechanical hand was that the grip should not be a simple spring grip, which would always be forced by a very slight leverage from without, the mechanism should be such as could not be forced except by breaking the hand Such a mechanism had been invented in a very simple and light form by Hobbs, and adapted to a number of different shaped hands In order that the hands or appliances might be removed at will and replaced by others it was essential that they should all be detachable, and for quick detachability the screw method was being replaced by others In addition to the makers named above the following had examples of their limbs at the demonstration Messrs Rowley, Hanger and the Essential Limb Co, for lower limbs, and Messrs Blatchford for arms

Mr **MUIRHEAD LITTLE** said that the chief duties of the lower extremity were to support the weight of the body at rest and in motion, and to act as the propellent force in the process of locomotion End pressure and leverage were the strains to which it was most exposed The upper extremity was mostly employed in prehension and traction—functions to which the foot of boot-wearing man was a stranger, and end pressure therefore was not one of the most important strains to which it was exposed while leverage was all important. In both the upper and lower extremities provision had to be made to maintain the appliance in place when in action and also, when at rest, against the action of gravity Weight was borne *(a)* by direct pressure of a part of the body downwards, such as the end of the stump or of a convenient bony process, such as the tuberosity of the ischium, or *(b)* by oblique pressure, when the artificial socket formed a more or less conical cavity into which a conical portion of the body fitted. These two were often generally combined Leverage was exerted by the lateral surface of the stump pressing against the side of the surrounding socket An ideal amputation stump should be as long as possible, it should be covered by sound, moveable, soft parts, and the scar should be placed in a position where it would not be exposed to pressure, and it also should not be adherent to the bone It should have enough muscles attached to it to move it with adequate force and no inflamed or hypersensitive nerve ends should be palpable in it The end or ends of the bone or bones should be rounded so as not to hurt the soft parts under them and the blood supply should be free and the skin well nourished Consideration and experience of modern artificial limbs led to the conclusion that except in the cases of the hip and shoulder, exarticulations were to be avoided, and that amputation through the limb segment above the joint was to be preferred In the lower extremity a stump capable of bearing some at least of the body-weight on its end should be aimed at Every pound of pressure here meant less pressure on other parts, which in some cases did not bear it well An analysis of the records of 549 cases of amputation of the lower extremity seen recently at Roehampton showed that the stumps in the lower third of the thigh are much more sound than those in the upper and middle thirds which latter region was the seat of nearly half of the total number (43 per cent) In the upper extremity the question of end pressure did not arise and here the condition of the lower part of the anterior and external surfaces of the stump was of most importance, because these surfaces had to take much of the pressure of the leverage action on the bucket Many arm stumps with large adherent guillotine scars covering the end of the bone had been found to be quite satisfactory in practice The presence of osteophytes was rarely any hindrance These were seldom large except in the thigh and then they were usually situated about the femoral insertions of the adductor muscles which were not exposed to much pressure The different sites of amputations called for special consideration Speaking of the upper extremity he said that a forequarter amputation gave no choice of flaps The resulting scars would generally bear a properly moulded shoulder cap and an artificial arm with some movements. In exarticulation at the shoulder the lines of scar should avoid the clavicle and the prominent bony ridges of the acromion &c, for on these the shoulder cap must press Amputations in the upper third of the arm offered very little hold for the socket of an artificial limb Owing to the arrangement of the muscular attachments around the joint the upper three inches of humerus or even more, were unavailable and as in the arm of average length the upper third was only a little over four inches long, very little was available even in an amputation at the junction of the upper and middle thirds A good deal could be gained by removing wholly or in part the folds of the axilla—i e the pectoralis major and the teres major This had been done with good result and seemed to be an operation worth doing in suitable cases The latissimus dorsi had not been interfered with so far as he knew It was less in the way than the other two muscles A gain of one inch of stump here was of the very greatest value and as large adherent scars covering the end of the bone were comparatively unobjectionable in the arm, the surgeon in amputating above the middle of the shaft of the humerus should save as much bone as possible even though there might not be skin enough to cover it completely The drag upon the adherent scar which gave trouble in the lower extremity is seldom complained of in the upper owing to the absence of much upward thrust The objections to amputations through joints in general applied to the elbow in particular force owing to the shape of the bones If it was impossible to get a forearm stump extending at least an inch and a half below the insertions of the tendon of the biceps amputation above the condyles of the humerus was to be preferred The action of the biceps tendon which tended to throw off the bucket when it contracted in flexion was one of the chief difficulties in these short-forearm stumps Unfortunately, this tendon could not be spared and its removal was out of the question The remains of the bellies of the flexor muscles, however, were of no use and had been removed in some cases with more or less advantage enabling a better grip on the stump to be obtained The middle third of the forearm gave good stumps but the lower third was not a favourable site Many stumps were cold and cyanotic and the skin tightly stretched and adherent Moreover, the ends of the bones were often tightly soldered together by fibrous tissue or even bone, and the movements of pronation and supination were lost Below the wrist it was worth while to save the carpus and base of the metacarpus if possible, provided movement was preserved The short stump thus formed could be used to actuate a movable thumb with considerable force by means of a simple appliance If one active finger or a thumb were left it was easy to fit a stump to which it could be opposed, and thus to give the picking up action and the power of holding a pen In the lower extremity he considered that exarticulation or amputation through the neck of the femur was better than amputation in the upper third of the thigh The short stump was unable to move the lever formed by the thigh bucket with sufficient force no matter how light the limb might be Such improvements had been made in fitting what was rather inaptly called a *tilting table* that patients who had tried both the ordinary thigh bucket and this appliance usually declared that the latter was much the best The middle third was the site of nearly half the amputations of the lower extremity treated recently at Roehampton In this region the objects aimed at should be a non adherent scar behind the bone and a good disposition of the muscular masses on the inner side If the great adductor muscles were allowed to retract too much a too conical stump resulted, and the bunch of soft parts at the top of the thigh just below the pubes formed a serious obstacle to the fitting of a socket. The tendons and fasciæ should therefore be sutured if possible over, but at least near to the end of the bone. The lower third of the thigh, just above the condyles, offered the best thigh stump for fitting with an artificial limb If a long anterior flap was made even though there might be an adherent scar behind the bone, a good end bearing stump often resulted If the patella could be securely fixed to the end of the bone so much the better The general objections to exarticulations applied to the knee joint In the leg below the knee the most favourable site was the lower part of the middle third With skilled fitting however even very short stumps were useful Amputation in the lower third of the leg seldom gave a satisfactory stump The bone surface at the end was too small for good weight-bearing, and the skin was often badly nourished cold, and cyanotic. Syme's amputation was deserving of its great reputation If properly done it gave a painless weight bearing stump The bones should be sawn through well above the internal malleolus so as to avoid too bulbous a stump, and care should be taken to make the section at right angles to the long axis of the whole leg and not at right angles to the often incurved lower fourth, otherwise a varus stump was likely to result Too low a section left no room for a strong transverse ankle-joint and a too voluminous heel flap meant an unsightly artificial foot and boot Of Pirogoff's amputation experience at Roehampton was small and unfavourable If the os calcis was not united to the tibia by bone it would sooner or later tilt over and cause pain and in any case the stump was too long for the fitting of the best type of foot Chopart s amputation gave a good bearing surface but generally the calf muscles pulled up the heel and tilted the lower end downwards, and painful pressure on the scar resulted The stump was too short to give a spring to the gait, and it was well nigh impossible to fix any prolongation on to it

Speaking of operation cases sent over from France, Major JOCELYN SWAN asked whether the speakers considered that the secondary amputation should be performed at once while the limb was still in a septic condition, or whether it should be postponed till healing had taken place

Lieutenant-Colonel D ELCUM I.M S, asked how long an artificial limb would last and whether the parts of a limb which were worn out could be renewed by anyone except a skilled maker

Mr MUIRHEAD LITTLE said that the secondary amputation should be done as late as possible. An artificial leg would last about seven years but probably something would require to be done in about a year and a half Arms had only been in existence about two years, so it was not known how long they would last Many of the men who came back to Roehampton after six months were those who had used them for very hard work Centres for repair were being started in provincial towns which would save the trouble of coming to London

Major ELMSLIE said that the longest time an arm had been in use was one year He considered that the fitting of an arm was only the first part of the business The man should then be trained to use his arm in a general way and later to make use of it in a special way according to his particular trade or occupation

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LONDON DERMATOLOGICAL SOCIETY —A meeting of this society was held on Oct. 16th Captain W Griffith the President being in the chair —The President announced that Dr Morgan Dockrell who was the first president of the society had presented a collection of books on dermatology which was to form the nucleus of a permanent library for the use of the society —The opening address of the session was given by Dr Leonard Williams entitled The Real Dermatology '—The following clinical cases were shown —Dr J L Bunch Two cases of Rodent Ulcer, the lesion being situated on the left orbit in the one case and on the left cheek in the other case —Dr Morgan Dockrell A case of Epithelioma supervening on Lupus Erythematosus —Dr W Knowsley Sibley A boy who had suffered with Pityriasis rubra pilaris for seven years and was just developing an attack of Guttated Psoriasis —The President A case of Xanthoma Multiplex also a case of Multiple Lupus in a boy who had exactly 80 distinct lupus nodules present

Reviews and Notices of Books.

Diseases of Occupation and Vocational Hygiene Edited by GEORGE M KOBER, M D, LL D, Washington, D C, and WILLIAM C HANSON M D Belmont, Mass Philadelphia P Blakiston s Son and Co 1916 Pp 918 Price $8

ANY contribution to the literature of diseases of occupation is to be welcomed particularly at the present time. The latest addition is the work of many American authors, with contributions by Sir Thomas Oliver and Dr T M Legge, of England, and Professor Dr L Devoto, of Milan The editors Dr George M Kober and Dr William C Hanson in their foreword set out that their aim has been ' the presentation of the basic data concerning the diseases of occupation in such a way as to render them available not only to physicians but also to employers employees, efficiency experts public health officials and legislators " With this object in view the work has been divided into three parts Part I. deals with the Specific and Systemic Diseases of Occupation, Part II with the Causation and Prevention of Occupational Diseases and Accidents, and Part III deals with Statistics and Legislation bearing on Occupational Diseases Each part is divided into chapters and sections, and the references which are numerous and valuable are given at the end of each section Some degree of repetition is inevitable in a work contributed by many authors, several of whom deal with the same subject from a different aspect, but in future editions unnecessary repetitions should be reduced

Part I, which deals with the Specific and Systemic Diseases of Occupation, includes the more common forms of industrial poisoning, such as poisoning by arsenic, brass, lead, mercury &c. Lead poisoning is fully described, but we cannot agree with Dr H. Linenthal who contributes a section on the early diagnosis of lead poisoning, that a history of exposure to lead justifies the diagnosis of lead poisoning in patients presenting obscure symptoms which otherwise cannot be explained We notice that throughout the section on lead poisoning by Sir Thomas Oliver no reference is made to the valuable experiments carried out by Mr Kenneth Goadby as to the effect on animals of ingestion and inhalation respectively of lead dust These experiments show that lead is far more poisonous when inhalaled than when absorbed in any other way a point to which Sir Thomas Oliver omits to draw attention [1] Poisoning by the inorganic gases and diseases of the chemical industry in general are not so fully dealt with as we think this important branch of industry deserves On the other hand, a section is devoted to a rare form of disease—viz., poisoning by manganese Similarly a section describing the effects on health produced by diminished atmosphere in ballooning and aviation by Dr Kober, shows the scope of the work

Systemic occupational diseases are dealt with in two chapters—Chapter I Dust Diseases of the Lungs, by Sir Thomas Oliver, Chapter II Diseases of the Blood, Circulatory System, and Kidneys, by Dr Thomas L S Leigh. There does not seem to us to be much advantage in describing the symptoms pathology, and treatment of diseases such as acute and chronic endocarditis and acute and chronic nephritis in a work of this nature The subjects are treated shortly, and we cannot find that a short epitome of these diseases is of value to the medical reader, who can study the subjects in detail in medical text books To the non professional reader a little knowledge of symptoms and treatment may, we feel, be a source of danger, and this is a treatise which makes a fair appeal to a lay public. Occupational diseases of the Nose, Mouth and Throat, and of the Eye and Skin are dealt with by separate contributors Occupational Diseases and Injuries of the Eye by Dr Würdemann occupy another chapter, and here for example we think that the subject cannot be dealt with at sufficient length to enable the instruction and conclusions to be of practical value For the diagnosis of foreign bodies within the eye Dr Würdemann suggests the use of the giant magnet He states however that this method of examination is somewhat dangerous We entirely agree with this statement and would suggest that such a method can only be safely employed by a skilled ophthalmic surgeon Occupational affections of the skin by Dr Brown, of Boston, considered from the point of view of the various trades and callings, shows the variety of occupations which produce skin affections, and deals with such widely different occupations as housemaids, musicians, and surgeons An attempt to include all who are likely to be affected by skin diseases has, we think, tended to crowd out some workers in the more important industries where such diseases in acute and severe forms are commonly met with Little or no mention is made of dermatitis affecting workers in the nitro derivatives of benzol or toluol A chapter on cancer and occupation is of interest, and includes effects produced by exposure to X rays and radium Part of this chapter is occupied with a brief description of the theories as to the causation of cancer, contagion and house infection, &c We hardly think such a study comes within the scope of the work

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[1] Lead Poisoning and Lead Absorption Legge and Goadby London 1912.

Part II deals with the Etiology and Prophylaxis of Occupational Diseases and Vocational Hygiene Dr Kober, one of the editors, contributes largely to this part Much of his contribution is in the nature of a résumé on personal hygiene, and again we have a protest to utter against redundancy We do not in any way minimise the value of personal hygiene in the prevention of occupational disease, but the omission of a consideration of this subject on general lines would in no way diminish the value of the essay The subsequent sections of this part deal with the various industries and industrial poisonings, and special accidents attaching to them Much of this is in many instances a repetition of Part I Some contributors briefly outline the various processes of manufacture in which industrial poisoning is to be met A few deal with the special preventive measures applicable to the various industries We notice the brief reference to poisoning by trinitrotoluene and tetrachlorethane In view of the importance which poisoning by these substances has assumed, we feel sure the subject will be more fully dealt with in future editions One section is devoted to the subject of vocational hygiene of the liberal professions, public service employees Several tables, one giving a list of industries and the poisons likely to be met with in each, and a series of mortality and morbidity statistics complete Part II

Part III, the Relation of Hospital and Medical School Work, Statistics Government Study and Legislation to Occupational Diseases, includes an interesting chapter by Professor L Devoto, of Milan, in which he describes the Milan Clinic for Occupational Diseases This should be read by all interested in occupational diseases and should prove an incentive to other countries to follow the lead given by Italy Frederick L Hoffmann, LL D, contributes a chapter on the mortality from pulmonary tuberculosis and dusty occupations The value of this chapter is diminished by the absence of a more definite analysis of the various dusts dealt with, but it contains a valuable lesson by showing the high rate of mortality from pulmonary tuberculosis among workers in dusty industries A chapter on the use and the fallacies of statistics may be of interest and serve as a preliminary study to those who have no knowledge of the subject but who wish to take an intelligent interest therein The remainder of Part III is concerned with legislative measures and the notification of occupational diseases

We congratulate the editors on the result of their work, which is well illustrated throughout

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Text book of Ophthalmology By Hofrat ERNST FUCHS, Professor of Ophthalmology in the University of Vienna, Authorised translation by ALEXANDER DUANE, M D, Surgeon Emeritus, Knapp Memorial Hospital, New York Fifth edition London and Philadelphia J B Lippincott Company 1917 Pp 1067 Price 30s

IN previous reviews of this work we have always expressed the opinion that it is the best of the larger text-books of ophthalmology In the presence of several excellent competitors it can only retain this proud position by keeping well abreast of the times The new (fifth) edition not only sustains but enhances its high reputation Though Dr Duane is very careful to distinguish his additions to the original by the use of square brackets, they are so ubiquitous that it is difficult to apportion the author's and the translator's contributions A rough estimate indicates that the latter is responsible for nearly half the book In previous editions the joins in the mosaic have been very evident In this edition, in spite of the brackets, the welding is very much more satisfactory Another great improvement consists in changes in the arrangement of the original text The many pages of remarks in fine print, which were formerly massed as an appendix at the end of chapters or major divisions, and whose considerable value and interest were thus obscured, have been split into shorter sections, each placed in direct juxtaposition to the portion of the text to which it relates Considerable additions have been made to the chapters on glaucoma diseases of the retina, and disturbances of motility, and to the sections on refraction, accommodation, and operations Dr Duane's well known interest in ocular paralyses is given perhaps rather too free play, somewhat to the detriment of proper balance On the other hand, some of the chapters on operations might be still further elaborated with advantage Other important additions deal with tuberculin and vaccine therapy, the visual field and colour testing the mapping of scotomata and the blind spot, the etiology of iritis, suppurative choroiditis, retinitis exudativa, and so on

The book is an admirable exposition of the subject and is well adapted for advanced students We think, however, that it has reached the limit of size suitable for a text-book Any further additions should be thoroughly incorporated, and room should be made for them by careful compression of the existing text

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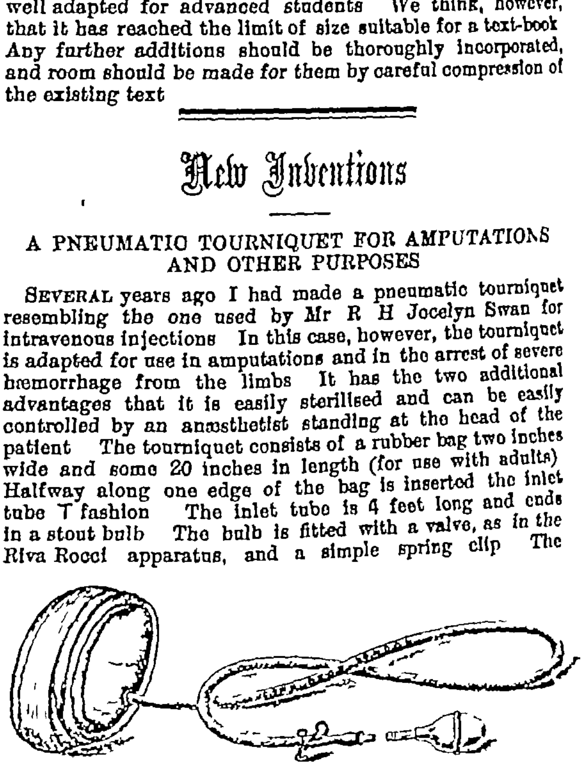
New Inventions

A PNEUMATIC TOURNIQUET FOR AMPUTATIONS AND OTHER PURPOSES

SEVERAL years ago I had made a pneumatic tourniquet resembling the one used by Mr R H Jocelyn Swan for intravenous injections In this case, however, the tourniquet is adapted for use in amputations and in the arrest of severe hæmorrhage from the limbs It has the two additional advantages that it is easily sterilised and can be easily controlled by an anæsthetist standing at the head of the patient The tourniquet consists of a rubber bag two inches wide and some 20 inches in length (for use with adults) Halfway along one edge of the bag is inserted the inlet tube T fashion The inlet tube is 4 feet long and ends in a stout bulb The bulb is fitted with a valve, as in the Riva Rocci apparatus, and a simple spring clip The bag is fitted in a sterilisable cover and has a lead back to prevent rolling when distended, this improvement being originally suggested by Colonel A Fullerton In use the bag is wrapped round the limb the inlet tube passing towards the head A 2½ inch linen bandage is then firmly applied over the tourniquet and the bag inflated till the distal pulse disappears In the course of an amputation, when all bleeding points have been secured the anæsthetist, by manipulating the valve end, can release the pressure, pumping up again if bleeding recommences In operating on patients with brittle arteries less damage will be done by this tourniquet than by any other, because the pressure is only just sufficient to compress the artery, and can be released immediately the artery is tied This tourniquet should prove useful in the transport of wounded when there is fear of hæmorrhage The bag and bandage can be applied beforehand, the actual inflation being all that is required if the emergency arises In this case one inflates till the bleeding stops a proceeding which could be left to a comparatively inexperienced person



The makers are Messrs. Down Brothers of St Thomas's street, London S E

J V FIDIAN,
Captain R A M C

SUPPLEMENT to THE LANCET, October 27, 1917

METEOROLOGICAL OFFICE

Advisory Committee on Atmospheric Pollution

REPORT ON OBSERVATIONS IN THE YEAR 1915-1916

Forming the Second Report of the Committee for the Investigation of Atmospheric Pollution

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INTRODUCTION

SINCE the publication of the Committee s first Report for the year 1914–15, some difficulty has been experienced owing to lack of funds It will be remembered by those who have read the Report above referred to that this Committee is a purely voluntary body, relying for funds upon outside support The work falls into two main divisions —

(1) The organisation of the whole scheme, preparing designs of gauges and instructions for their operation as well as for analysis of deposit, collecting, filing, tabulating, discussing and publishing the results, and generally controlling and coördinating the work

(2) The establishment and operation of the gauges, collection and analysis of deposit, and the sending of monthly returns to the Committee

The cost of No (2) is borne by the observing stations, and is a very important item, amounting to about £1000 for the year, without counting the cost of providing and installing the gauges The trouble has been to finance No (1), as it is hardly to be expected that the bodies which bear the cost of No (2) should also bear that of No (1)

In view of the above considerations, application was made to the Department of Scientific and Industrial Research for a Government grant in aid of the work included under No (2), and the Committee have now gratefully to acknowledge the generous help given to them by the Department

Not only have their financial difficulties been met by a substantial grant, but the work has been given official approval and status by placing it under the control of the Meteorological Office The Committee has been constituted an 'Advisory Committee on Atmospheric Pollution to the Meteorological Office, and its original title has been altered accordingly At the same time little change in the personnel has been made, with the exception that the Department of Scientific and Industrial Research have power to appoint a representative, and it has also been decided to ask each coöperating authority to appoint a representative It will thus be seen that a new impetus has been given to the work, and although, strictly speaking, the changes which are above indicated took place during 1917, yet as their effect is retrospective, as above indicated it appeared best to set them forth here

It was originally intended, on receipt of the grant above mentioned, to publish the Reports for 1915–16 and 1916–17 at the same time, as the latter year s returns are practically all in Further consideration indicated the advisability of placing the 1915–16 results before the public at the earliest possible moment, instead of delaying them to incorporate the 1916–17 results in the same Report It was therefore decided to do this but it is hoped that the publication of the third Report will not be delayed more than two or three months behind the present one And future Reports should be made public very shortly after the conclusion of each year s observations on March 31st

The Committee felt that the question of carrying on its work and that of the observing stations during the war required very careful consideration, and, after full discussion, it was decided that it would be inadvisable to stop the work during the war if it could be carried on. In coming to this decision the importance of continuity in the collection of such statistics was kept in mind, as well as the advantages which would arise from having all the data on atmospheric pollution ready by the time peace returned, when people s minds would again find interest in more peaceful problems

The connexion between atmospheric pollution and fuel economy was not lost sight of, and at a time when this is of such vital importance as the present the loss of combustible matter represented by the soot suspended in the air appeared a legitimate subject for investigation.

In considering the subject from the point of view of fuel economy it is interesting to note that, taking the case of the County of London alone for the year 1915–16, and basing the figure upon the average returns from the different observing stations, the total quantity of matter deposited from the air during the year on London was approximately 54,200 tons, and by reference to the figures shown in the tables it will be seen that this deposited matter is, to a great extent, derived from fuel waste in the form of smoke. The six months April to September were responsible for about 24,900 tons, and the six months October to March 29,300 tons. Not only is it necessary at present to scrutinise carefully every source of waste, but it is equally necessary to conserve the health and physical energy of the people. It may not be out of place in this connexion to mention that the approximate quantities of air, solid food, and water required by an adult human being per day are:—

Air	30 lb
Food	2.7 ,,
Water	4.5 ,,

In the first Report, for the year 1914–15, maps were given showing the positions of the deposit gauges for the stations then at work; in the present Report, therefore, these maps have not been reproduced, but in the case of new observing stations not already included in the previous Report maps are now given (pp. xix. and xx.) and the position of each gauge is indicated in a similar way to that adopted in the 1914–15 Report—that is, a black circle 1 inch in diameter is placed upon the map so that its centre coincides with the position of the deposit gauge.

It has been naturally unavoidable that owing to the pressure of other work and the depletion of staffs arising from the war certain stations have found it impossible to continue observations, so that the list of observing stations for the year under consideration will be found considerably curtailed as compared with the preceding year. It may be stated, however, that the cessation of observations is in most cases only temporary, and it is confidently expected that when peace conditions return the work of collecting, analysing, and reporting the results will be again resumed in most of the stations referred to.

STANDARD GAUGE

The standard deposit gauge, fully described in the first Report, has continued to fulfil its function satisfactorily. Certain difficulties have, however, become apparent during the course of the investigation. For example, the porcelain glaze of the collecting vessels has in one case shown a slight solubility in water, with an accompanying addition to the collected water of the material from the enamel. This has, however, been very slight, and where it has occurred there has been no difficulty in separating the constituent derived from the glaze such as lead, from those normally deposited from the atmosphere. This difficulty has only been noticed in the case of one gauge—that of York, and although the presence of lead in the water was at first attributed to contamination from the lead paint which coated the outside of the gauge vessel, it was subsequently found that the source of the lead was the enamel coating the inner, or catchment, surface of the vessel. Of course, it would be preferable to have an insoluble enamel for this purpose if it were possible to obtain it, but the contamination fortunately being due to a material not normally present in the atmosphere does not affect the results.

Again, during the winter of 1915 several months' observations were lost owing to bursting of the bottles by frost. This is, however, difficult to avoid, as in an exposed position no amount of protection by jacketing or enclosing is sufficient to prevent the water freezing when there is a long continued frost, although for frosts of short duration enclosing the collecting bottles in a wood casing surrounding the stand of the gauge is an effective protection.

The efficiency of this gauge has been criticised on the ground that the rainfall governs the amount of impurity collected, and that the gauge does not measure the total impurity present in the air, since this is not all deposited, some remaining in suspension.

It therefore becomes important to point out that the primary function of the gauge is to collect deposited impurity so as to compare the measurements of the amounts which fall in different localities. The amount collected is not the same as the amount in the air at any one time, but in the long run the greatest amount is likely to be found in the gauge which is exposed to the atmosphere richest in pollution. Naturally rainwater is also collected, but the gauge does not depend on rain for its action, as in dry weather it also collects whatever falls into its catchment area.

The fact that measuring deposited impurity cannot provide complete information as to the degree of atmospheric pollution is very obvious. This point was carefully considered by the Committee at the start, and was dealt with in their first Report under "Methods of Work." It is therefore unnecessary to go over the ground again now, but it may be well to indicate that although a complete statement as to air pollution should deal with suspended as well as deposited matter, the measurement of either alone may be very valuable.

In order to obtain information relative to the very finely divided matter which remains suspended in the air for long periods, the Committee have adopted a standardised form of filter, and this is available for the use of those who wish to obtain more complete information than measurement of deposit alone can give. This filter permits of taking an observation in about 10 minutes and has been exhaustively tested and calibrated.

Relative to the criticism that the rainfall governs the deposit, it will be shown in the present Report that this is not the case. The whole question of the relation of deposit to rainfall has been dealt with rather fully, and it will be seen that while the quantity of soluble matter deposited is evidently affected by the rainfall, this is not true to anything like the same extent for the insoluble parts of the deposit.

ANALYSES

Since issuing the last Report the Committee have had the advantage of a wide experience as regards the chemical procedure. Several difficulties were encountered, but the more important of them have been investigated and where it appeared advisable, from the point of view of scientific accuracy, the "Instructions for Analysis" have been revised.

It has been thought that an account of this part of the work will be of interest, and also useful in the criticisms of the compiled data, and with this in view it has been included in the present Report.

The Committee have received from several of the chemists who are coöperating in the investigation some suggestions and criticisms, and wish to take this opportunity of expressing their appreciation of the assistance derived from them. A Sub-Committee was appointed to inquire into the chemical procedure and to make such recommendations to the Committee as appeared necessary in the light of more than a year's experience.

In its investigations the Sub-Committee had the advantage of making use of the gauges in the County of London, and for this they are indebted to Dr W H Hamer, the Medical Officer of Health to the London County Council, who kindly allowed the Council's chemist, Mr J H Coste, to coöperate.

Errors and Difficulties arising from Algal Growth

Mr A R Tankard, of Hull, drew the attention of the Committee to this matter. The algal growth rendered filtration a tediously slow process, and to some extent was a source of error in the determination of undissolved matter and ammonia. It seemed highly desirable that some steps should be taken to prevent this growth.

Several methods were suggested, the chief of which were the use of

1. Formaldehyde
2. Mercuric chloride
3. Metallic copper
4. Copper sulphate

Mr Tankard kindly undertook to investigate the effect of formaldehyde. It was anticipated by him that the ammonia determination might be interfered with, but owing to the great dilution, it was thought that this would not occur to a serious extent. His experiments proved, however, that the ammonia almost entirely disappeared. In a particular case he showed that water containing 0·006 gramme ammonia per litre contained only one tenth of this amount after three weeks in the presence of formaldehyde (1 part in 20,000). In another case 0·0007 gramme of ammonia per litre was reduced in two weeks to 0·00014 gramme. It was therefore, concluded that the use of formaldehyde was not permissible.

On the other hand, Mr Tankard made some interesting observations on the change in the ammonia contents of the water in the absence of formaldehyde. To quote his own remarks :—

> "In the absence of formaldehyde the ammonia in rain water tends at first to diminish in amount, but after a lapse of time a rapid growth of fungus sets in and the amount begins to increase in some cases. For instance the August rain water here contained 0·0006 gramme per litre when first examined, a week later the amount was 0·0005 and a fortnight after the first determination the amount had fallen to 0·0003 then the quantity of ammonia began to increase and ten days later still had risen to 0·0005 gramme per litre. As the growth of fungus both in rapidity and amount will depend upon a number of factors not readily controllable it cannot be stated that at the end of the monthly period the ammonia found will be a correct indication of the amount washed down from the atmosphere."

Mercuric Chloride.—This was considered by the Sub-Committee but in view of its uncertain behaviour when exposed to heat during the process of analysis it did not seem very promising. Allowance would of course, have to be made in the analysis for the mercuric chloride added.

Metallic Copper.—The growth of bacteria in the water contained in gas holder tanks and similar apparatus has been the subject of investigation in connexion with the operation of gas making plant, and it has been observed that these bacteria can decompose dissolved sulphates with the evolution of H_2S. A point that was observed was that the presence of metallic copper prevented in a large measure the development of bacterial growth. Probably minute traces of a copper salt were formed by the action of the water upon the metal and dissolved in the water, sufficient to prevent within a certain radius of the metal the growth of the bacteria.

It was suggested that if a wire spiral or a strip of pure copper were suspended from the cork of the collecting bottles the growth would be prevented. The dissolved sulphates in the water would probably form copper sulphate with the metal and this would act as an antiseptic. In this case no correction would be necessary for the SO_4, but a small deduction from the total solids and total dissolved matter would have to be made owing to the small quantity of copper added.

After considering this from all points of view it was decided not to adopt it for the following reasons :—

1. Probably both sulphate and carbonate of copper would be formed, thus complicating matters.
2. Additional work would be involved in the separate determination of the amount of copper in solution in the water.

Copper Sulphate.—After considering all aspects of the question the Sub-Committee concluded that copper sulphate seemed to be the best method of dealing with the difficulty. Past investigations indicate that one part of the crystalline salt per million of the water is sufficient to prevent growth, and working on this basis the Sub-Committee have inserted a new paragraph in the "Instructions for Analysis." It was therefore prescribed in the revised "Instructions" that a measured quantity of a standard solution of copper sulphate be added to each of the collecting bottles so as to ensure the presence of this salt to the extent of not less than one part per million. A small correction is necessary on account of the added salt but this involves nothing more than a simple subtraction from the figures for the total dissolved solids and the sulphate.

The use of copper sulphate has proved entirely satisfactory both by general and microscopic observation. In one case a parallel experiment was made on two samples of the same water, one sample of water having added to it copper sulphate to the extent of one part per million. Whereas the untreated sample showed copious algal growth after two weeks exposure the treated sample remained unaltered.

Filtration.—In addition to the avoidance of errors the prevention of algal growth was desirable on the score of easy filtration. However even in the absence of algæ, &c., it is a tedious process to pass the whole volume of collected water through the filter. Mr J F Liverseege in a letter to the Committee suggested decantation after thorough settling. Some experiments have recently been made in London, and it appears that decantation is quite permissible. The amount of suspended matter remaining in the water collected in the London gauges after standing for four days was found to be quite unweighable, in fact, slightly negative results were found on filtering the clear supernatant liquor Decantation is therefore prescribed in the revised "Instructions"

Drying Temperature for Dissolved and Undissolved Matter —The original instructions prescribed 105° C for this In view of the greater convenience of 100° C, it was considered advisable to ascertain if any error would be involved in the change The following observations on London rainfall show the relation between these two temperatures —

Weight of undissolved matter after drying at 100° C	1951	milligrammes
Weight after further drying at 105° C	1935 5	,,
Extra loss due to further drying at 105° C	15 5	= 0 8 per cent of undissolved matter
Weight of dissolved matter after drying at 100° C	1967	milligrammes
After further drying at 105° C	1967	,,
Loss	Nil	

In view of these facts there seemed no need for insistence on 105° C, and therefore 100° C is prescribed in the revised "Instructions"

Chlorine —In view of the greatly diluted character of this constituent it was thought that the usual process of titration might involve errors owing to the solubility of the silver chromate Direct comparison with Volhard's method indicated that no serious error existed It was therefore considered unnecessary to alter the method originally prescribed except to suggest that concentration should precede titration

Ammonia —It was suggested by Mr Tankard that the ammonia might be more accurately determined by Nesslerising direct instead of after distillation, as was originally prescribed

This point has been carefully investigated, and it has been found that under suitable conditions practically the same result is obtained by any one of the three methods referred to The following are some actual observations on the same sample of water —

By distillation and titration	26 5	milligrammes	NH_3
,, ,, Nesslerisation	25 7	,,	,,
,, direct Nesslerisation	26 4	,,	,,

For direct Nesslerisation it is, of course, necessary that the water should not be appreciably coloured

In view of these results full discretion has been given to the analyst in the revised "Instructions"

Ash of Soluble Matter —Section 8 of the revised "Instructions" provides for the addition of ammonium carbonate after ignition This arose out of a suggestion by Mr J F Liverseege The ignition of the residue would tend to decompose any soluble carbonates in the original soluble matter

The advisability or otherwise of the use of ammonium carbonate would therefore depend upon the chemical character of the residue In a particular case this residue obtained from one of the London gauges was found to be made up as follows —

Sodium sulphate	1 227	grammes
Calcium ,,	0·329	,,
Calcium carbonate	0·530	,,
Sodium chloride	0·178	,,

and clearly pointed to the advisability of using ammonium carbonate

Tarry Matter —In the original "Instructions" this was considered to be the loss of weight due to extraction with CS_2

A question arose as to whether this could not be more accurately determined by the direct weighing of the matter extracted by CS_2, but investigation has shown that the extracted matter gains weight on drying, due probably to the oxidation of small quantities of free sulphur and sulphur compounds in the tar The method of determination originally prescribed was therefore retained

The following are the results of observations in London stations —

Station	Tar by difference	Tar by direct weighing
Embankment Gardens	0 153 grammes	0 161 grammes
Finsbury Park	0 220 ,,	0 233 ,,

Other Points —In revising the "Instructions" attention was directed to methods of sampling, quantities of the liquid to be used for various estimations, and to the return of sulphates in terms of SO_3 instead of SO_4

While it is too much to hope that the "Revised Instructions for Analysis" are entirely free from objection, it is believed that they do not leave room for any serious errors

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"REVISED INSTRUCTIONS FOR ANALYSIS" OF RAIN WATER AND SOLIDS DEPOSITED IN THE STANDARD GAUGE, ISSUED JANUARY, 1916

1 The bottles containing the collected rainfall should be properly labelled with name and number of station and the period of collection, and should be kept standing at the laboratory for several days until completely settled The approximate volume of the liquid should be ascertained at the time of receipt

UNDISSOLVED MATTER

2 The whole of the amount collected should be used for estimating the suspended UNDISSOLVED MATTER

Filtration —3 If the bottle has been allowed to stand for a sufficient time to allow the liquid to become clear, there will be no necessity for the whole volume to be filtered The clear portion can be carefully decanted off by means of a syphon tube inserted so as to reach to within one inch of the bottom of the bottle The bottle should stand at a height above the vessel in which the decanted liquid is to be collected, sufficient for the easy and adjustable discharge of the flow

The filtering medium which has given the best results consists of a layer of pulped filter paper suitably disposed in a Gooch crucible The Gooch crucible should be fitted by means of an adapter to a filtering flask having a side tube for connexion to a vacuum pump

The filter is prepared by weighing a 12 5 cm filter paper or by tareing it against another paper of the same size and beating this with about 200 c c of the decanted liquid By violently shaking this, a very finely divided pulp is produced and part of this is placed in the Gooch crucible and lightly pressed down by means of a glass rod with a flattened end Gentle suction is then applied and the filter is ready for use Should it get clogged up, the pulp, together with any solids collected upon it, may be removed and kept for further treatment and a fresh filter made my placing some clean pulp upon the crucible

Having decanted off the clear liquid to within one inch of the bottom of the bottle the remaining turbid part must be shaken up and transferred to the filter, the bottle being washed out with some of the decanted liquid with the aid of a clean long handled test-tube brush Any paper pulp left over or previously removed is then put on the top of the matter collected in the crucible Should there be more than one bottle of collected rainfall, each should be dealt with in the manner described, the whole of the pulp and the filtered matter being finally placed together in the Gooch crucible for subsequent treatment

Undissolved Matter —4 The Gooch crucible, after its contents have been washed with distilled water is dried to constant weight, the difference between this weight and the weight of the empty crucible plus filter paper representing the TOTAL UNDISSOLVED MATTER A temperature of 100 C is sufficient [illegible] this

Tarry Matter.—5. The crucible is then placed in an extraction apparatus and contents extracted with Carbon bi-Sulphide. The difference found after drying at a 100° C represents the TARRY MATTER.

Ash.—6. The residue from above is ignited for the determination of Ash. Care must be taken that any particles which might possibly drop through the holes in the crucible are not lost. The residue after ignition is the ASH of the UNDISSOLVED MATTER and the loss is the COMBUSTIBLE MATTER insoluble in CS_2. (Allowance, of course, being made for the filter paper.)

DISSOLVED MATTER

In the determination of DISSOLVED MATTER it will be necessary to reserve about eight litres of the decanted liquid. In the event of there being two or more station bottles, a proportional quantity should be taken from each bottle so that when the separate quantities are added together the mixture will represent a true average of the whole of the liquid collected.

Loss on Ignition and Ash.—7. One litre (or smaller quantity if there is a large proportion of dissolved solids present) of the decanted liquid is evaporated to dryness on a water bath and afterwards dried at 100° C to constant weight. The residue is TOTAL DISSOLVED SOLIDS.

The residue is ignited at a dull red heat until all combustible matter has been consumed, then moistened with Ammonium Carbonate and again gently ignited.

Loss is "LOSS ON IGNITION" of matter dissolved in water.

Residue is "ASH" or inorganic matter dissolved in water.

Sulphate.—8. One litre of the decanted liquid should be acidified with Hydrochloric Acid, boiled, Barium Chloride added, filtered, and Barium Sulphate weighed. To be reported as SO_3.

Chloride.—9. 500 c.c. or suitable quantity of the decanted liquid titrated with N/10 Silver Nitrate Solution. If the amount of Chloride present is small the liquid can be concentrated by evaporation before being titrated.

Ammonia.—10. One litre of the decanted liquid just acidified with dilute Sulphuric Acid and concentrated to 100 c.c. This after making decidedly alkaline, to be distilled into N/10 acid and the Ammonia calculated.

(Alternative. If the liquid is not appreciably coloured, 10 c.c. to 25 c.c. may be directly "Nesslerised" with 1 c.c. of Nessler reagent.)

Lime.—11. One litre of the decanted liquid, to which solution of Ammonium Oxalate and a few drops of Ammonia have been added, to be concentrated to 100 c.c., the Calcium Oxalate to be filtered, dried, gently ignited and weighed.

Alkalinity and Acidity.—12. One litre (or smaller quantity) of decanted liquid, if alkaline, to be titrated with N/10 or N/100 Hydrochloric Acid, if acid, with N/10 or N/100 Sodium Hydroxide, using Methyl Orange as indicator, acidity to be calculated as H_2SO_4 and alkalinity as NH_3.

PREVENTION OF GROWTH OF ORGANISMS, ALGÆ, ETC.

Before the bottles are placed in position under the gauges at the beginning of each month, 1 c.c. of an aqueous solution of $CuSO_4 5H_2O$ containing 15 grammes of the crystallised salt per litre should be added to each bottle.

The use of Copper Sulphate as an antiseptic involves a small correction in the determination of TOTAL DISSOLVED SOLIDS and SULPHATES. The following deductions should be made:—

(*a*) From the quantity of TOTAL DISSOLVED SOLIDS (par. 7), as determined from the above instructions, deduct 11 milligrammes for each bottle of rainfall collected.

(*b*) From the "loss on ignition in Dissolved Matter" as determined from the above instructions, deduct 1 milligramme for each bottle of rainfall collected.

(*c*) From the quantity of SO_3 (par. 8) as determined by the above instructions, deduct 5 milligrammes for each bottle of rainfall collected.

NOTES ON THE SELECTION OF CHEMICAL CHARACTERISTICS

It should be pointed out that an examination, even approaching a complete analysis of the deposits of all gauges month by month, would be a task entirely beyond the Committee's resources. Such an analysis would involve the estimation of all elements contained in the deposits, together with their form of combination, and it would not be complete without a botanical and bacteriological study of the organisms present.

In order to devise a simple scheme of investigation, which can be uniformly carried out by any competent analyst, it is necessary to select a few characteristic items which appear likely to throw most light on the nature of the polluting matter, and which can be determined month by month in ordinary routine work for a large number of samples.

The following explanation of the items recorded, together with the reasons for their selection, may be useful for non-chemical readers of these reports.

Total Solids.—This heading comprises all the solid matter suspended either by itself or in combination with water in the atmosphere. A portion of it may be considered as a legitimate constituent of the atmosphere, as air, free from dust of one kind or another, can only be expected at extremely high altitudes. A portion of the total solids is soluble in water and is found by the evaporation of the deposited water or an aliquot portion of it. The remainder, being insoluble in water, appears mostly as a sediment in the collecting bottles after standing for some time. A small portion may remain suspended in the water, particularly after agitation.

Undissolved Matter.—The matter freely suspended in air and insoluble in the deposited water has, obviously, the first claim for examination. It consists largely of dust from the ground and carbonaceous smoke from the incomplete combustion of raw fuel. The composition of the dust varies in different districts according to the geological and surface features of the ground. It is different in town and country and depends upon the kind and state of roads and other open spaces. The portion due to mineral dust in the undissolved solids can be approximately gauged by their percentage of "ash" (this value also includes the "ash" contained in soot or smoke) obtainable upon ignition. However, before igniting the undissolved matter it is extracted with carbon bisulphide. The portion soluble in carbon bisulphide is largely composed of tarry matter, which is derived from the oily constituents of coal smoke.

It must be remembered that coal, on being burnt in a grate, is partly carbonised, yielding volatile products similar to those obtained from a gas retort. Unless the fuel bed is so arranged that these products undergo complete combustion they will issue from the chimney along with the unconsumed sooty carbon. The tarry matter gives, therefore, an indication of the amount and character of the soot contained in the deposits. (The amount of fatty extract from vegetable or animal dust, which would be recorded under this heading, is probably negligible.)

The "loss on ignition" of the undissolved matter represents largely the carbonaceous matter, such as soot, emitted in the form of smoke. It would also represent any organic matter of vegetable or animal origin carried into the air in the form of dust. A further, but relatively small, portion consists of water of constitution from clayey matter, carbon dioxide from limestone, and the like.

Dissolved Matter.—The dissolved matter consists of that portion of the total solids which is readily soluble in water, such as chlorides, sulphates, and other salts. Free acids originally present in the atmosphere, such as sulphur dioxide or sulphuric acid, may react with the basic constituents of the undissolved matter and go into solution either in the course of, or after, deposition.

The only analytical treatment to which the dissolved solids are submitted is the estimation of the total mineral constituents contained in them by ignition. The "loss on ignition," being the difference between their original weight and the weight of "ash" obtained, represents partly combustible organic matter and partly water of constitution or volatile products of decomposition, such as carbon dioxide, ammonium salts, sulphuric or sulphurous acid, nitric acid, &c.

Apart from the above items, the sum of which represents the total solids, the separate estimation of a few constituents, already included in the total or in one of the items, is made, as they appear to throw some light upon the character of the various deposits.

Sulphates.—The sulphates present in the liquid portion are estimated and returned in terms of SO_3—i.e., sulphur trioxide or sulphuric anhydride—which represents the acid portion of all sulphates. The basic portion, such as ammonia, soda, lime, alumina, is not included in this figure. This item can be taken to represent the oxides of sulphur derived from the combustion of coal, oil, or gas containing sulphur of any kind.

Chlorides.—The chlorides are returned in terms of Cl, and do not, therefore, include the basic portion, which would probably consist of alkali or magnesia. It is probable that the greater portion of the chlorides is due to wind borne sea water spray.

Ammonia.—This is returned as free ammonia (NH_3), although it is probably present in most cases in the form of salts, such as sulphate or chloride. It may be derived from the carbonisation of coal in open fires and also from the decomposition or degradation of vegetable or animal nitrogenous matter.

Lime.—The estimation of lime and that of alkalinity or acidity of the deposits is optional, and was included in the analytical scheme with a view to its further extension.

It would be interesting to include tests for a great number of other items in these investigations, for instance, the estimation of the alkalies—iron, alumina—the identification and state of oxidation of the various acid and basic radicles, the separation of organic compounds, and the bacteriological examination of deposits, but, for the reasons stated above, the Committee think it desirable for the present to restrict the experimental work as far as possible, and to obtain the maximum results from the information thus gathered.

RESULTS OBTAINED IN THE YEAR FROM APRIL, 1915, TO MARCH, 1916

CLASSIFICATION ADOPTED

In the first Report of the Committee the numerical results for each element of deposit were classified under certain groups, A, B, C, and D, chosen for the purpose of permitting easy and effective comparison between the stations.

As in the present Report the same classification is adhered to, the preliminary explanatory matter showing the basis of the above classification is here again repeated for convenience of reference.—

Class A includes the stations which have less than 1 unit of deposit per square kilometre.

Class B, the stations which have between 1 and 3 units of deposit per square kilometre.

Class C, the stations which have between 3 and 5 units of deposit per square kilometre.

Class D, the stations which have 5 or more units of deposit per square kilometre.

The unit has been adjusted to suit each separate element, but the proportional division has been kept the same throughout. Thus for "total solids" the unit is 5 tons and the law of classification is—

Class A, less than 5 tons per square kilometre per month.

Class B, from 5 to 15 tons per square kilometre per month.

Class C, from 15 to 25 tons per square kilometre per month.

Class D, from 25 or more tons per square kilometre per month.

It will be understood that the figure 5 belongs to Class B, not Class A, and so on.

The units and limits in the several cases are as follows.—

Insoluble Matter

Unit		Limits			
—	Tons per K² per month	A Less than	B	C	D Over
Tar	0·05	0·05	0·05 to 0·15	0·15 to 0·25	0·25
Carbonaceous other than tar	1	1	1 to 3	3 to 5	5
Ash	2	2	2 to 6	6 to 10	10

Soluble Matter

Loss on ignition	0·75	0·75	0·75 to 2·25	2·25 to 3·75	3·75
Ash	1·5	1·5	1·5 to 4·5	4·5 to 7·5	7·5
Total solids	5	6	5 to 15	15 to 25	25
Sulphates	1	1	1 to 3	3 to 5	5
Chlorine	0·3	0·3	0·3 to 0·9	0·9 to 1·5	1·5
Ammonia	0·05	0·05	0·05 to 0·15	0·15 to 0·25	0·25

Note.—Although sulphates in 1914–15 were returned as SO_4 and in 1915–16 as SO_3, the unit for classification has not been altered, but for the purpose of comparing the two years the sulphates in 1914–15 were re classified as SO_3.

TABLES INCLUDED IN REPORT

Table I shows the monthly deposit for two selected stations, Oldham and Malvern, chosen as showing respectively the greatest and least amount of total solids deposited.

Tables II and III show respectively a comparison of monthly means for all stations for the half years April–September, 1914–15 and 1915–16, and October–March, 1914–15 and 1915–16.

Table IV compares the monthly means for summer and winter months of the year 1915–16.

Tables V and VI give the classification of the elements of pollution under Groups A, B, C, and D for the same periods as Tables II and III and based upon the monthly means as given in Tables II and III.

Tables VII and VIII give the totals of each group, A, B, C, and D, for each element of pollution for all stations taken. These tables are prepared from Tables V and VI and cover the same periods.

Table IX shows the average deposit of each element of pollution for each month for a certain group of 23 stations which provided practically continuous observations over a whole year from October, 1914, to September, 1915. This also shows the amount of each deposit per 100 mm of rainfall.

Table X. is similar to Table IX, but includes the eight London stations only and is for the year from April, 1915, to March, 1916

Owing to the war and the consequent need for economy, the Committee considered it advisable to omit from this Report most of the tables giving the actual monthly deposit for the different stations Two stations are however, given in Table I, selected as having the greatest and least deposit, and it is hoped that the other tables given will prove adequate for the purpose of this Report All monthly returns have been published already *in extenso* in THE LANCET from time to time, and the figures are thus available for any who desire to refer to them.

For the purpose of such reference it may here be stated that the monthly returns and dates of publication were as follows —

Return for		
April, 1915	Published in THE LANCET of	Aug 21st, 1915
May, „	„	Oct 9th, „
June, „	„	Nov 6th „
July, „	„	Jan 29th 1916
Aug „	„	Feb 19th, „
Sept, „	„	Mch 25th „
Oct, „	„	Apl 15th „
Nov and Dec, 1915 and Jan, 1916	„	June 3rd, „
Feb and Mch, 1916	„	July 15th „

It will be observed on referring to Tables II, III and IV that the number of months used to obtain the figure representing "monthly mean" deposit is given for each station It must, however, here be pointed out that when this number falls far short of six for the half year broad inferences cannot be drawn, taking, for example, an extreme case where only one month's record is available for the half year it may be that this month is not fairly representative of the period considered

DISCUSSION OF RESULTS

We may examine the results from several points of view, and it may be well to summarise here the aspects towards which we shall direct our attention. These are—

(1) Comparing the year 1915–16 with 1914–15 is there any indication of an improved state of the atmosphere or the reverse?

(2) What are the stations showing the greatest and least amount of deposit?

(3) How is the amount of impurity deposited affected by the seasons?

(4) Is there any indication of a relation existing between e g rainfall and total deposit or between the different elements of pollution?

To assist in making a more general use of the tables of deposit the following list of equivalents may prove of value

One metric ton per square kilometre is approximately equivalent to—

9 lbs per acre
2 56 English tons per square mile
One gramme per square metre
1 1000 millimetre depth of rainfall

Tables II and III—As these tables are for comparison of the first two years of records they include only such stations as were operating in both 1914–15 and 1915–16

It will be found, therefore, that a greater number of stations are included in Table IV, which refers only to stations at work in 1915–16

Considering first the six summer months, April to September inclusive, and comparing the two years on the basis of total solids deposited, the stations fall into three groups (1) Those in which the total deposit in 1915–16 was greater than in 1914–15, (2) those in which it was less, and (3) the stations which showed no alteration These groups are given below, and for this purpose stations which do not show a greater alteration in total solids than 0 3 metric ton per square kilometre have been placed in Group (3)

Total Solids Deposited in the Summer Months of 1915–16 Compared with 1914–15

Deposit		
Increased in 1915–16	Diminished	Unchanged
Liverpool London — Meteorological Office Embankment Gardens Ravenscourt Park Southwark Park Wandsworth Common Golden Lane Manchester — Cheadle Davyhulme Fallowfield School of Technology Whitefield Oldham Sheffield — Hillsborough Park Meersbrook Park Weston Park Greenock Leith	Birmingham, Central Bolton Malvern Sheffield, Attercliffe York	Kingston upon Hull London, Victoria Park Finsbury Park Newcastle on Tyne Exeter

It is very noticeable here that in the great majority of stations there has been a heavier deposit in the summer of 1915–16 than in 1914–15 This is too uniformly true to be a coincidence, and suggests a common cause

A similar method has been applied to the six winter months and the two years compared on the basis of total solids deposited, with the results given below —

Total Solids Deposited in the Winter Months of 1915–16 Compared with 1914–15

Deposit		
Increased in 1915–16	Diminished	Unchanged
Birmingham, Aston Birmingham, S W London — Meteorological Office Embankment Gardens Finsbury Park. Ravenscourt Park Southwark Park Victoria Park Manchester — Ancoats Philip's Park School of Technology Whitefield Newcastle-on Tyne Coatbridge Glasgow — Bellahouston Park Botanic Gardens Richmond Park Southside Park Greenock Leith	Bolton Exeter Kingston upon Hull Wandsworth Common Manchester — Davyhulme Moss Side Queen's Park Oldham York Glasgow — Alexandra Park. Blythswood square Ruchill Park Tollcross Park Victoria Park	Liverpool London, Golden lane Malvern Manchester, Bowdon

In this case there is again a preponderance of stations in which the deposit has increased, but it is not so marked as for the summer months

If we take the mean monthly deposit in London—i e, the average of all London stations—this was, for the summer of 1914–15, 10 91 metric tons per square kilometre and for the winter 11 41, whereas for the corresponding periods of 1915–16 it was 13 41 and 15 97 respectively, showing a marked increase in both seasons The mean monthly deposit for the whole year in London was in 1914–15 11 16 tons per square kilometre and in 1915–16 14 69, an increase of over 30 per cent

It is to be noted, however, that for the summer comparison in this case there was only one month available in 1914–15 for five out of seven of the London stations

In Tables II and III the summer and winter deposits for each station are compared for the years 1914–15 and 1915–16, and we have seen that the latter year shows a majority of stations with increased deposit In Tables VII and VIII we go a step farther by taking each element of pollution and finding the total of stations giving deposits grouping under Class A, B, C, or D This is derived from Tables V and VI, and like these is based on the mean monthly deposits for summer or winter In the following table we have again reduced Tables VII and VIII to a comparison of the number of A's and B's added together and the C's and D's

Comparison of 1914–15 with 1915–16

—			April to Sept (12 stations)		Oct to March (38 stations)	
			A & B	C & D	A & B	C & D
Total solids	1914–1915		9	3	20	18
	1915–1916		10	2	16	22
Tar	1914–1915	Insoluble	10	2	34	4
	1915–1916		9	3	21	17
Carbonaceous	1914–1915		8	4	25	13
	1915–1916		8	4	30	8
Ash	1914–1915		8	4	28	10
	1915–1916		8	4	27	11
Loss on ignition	1914–1915	Soluble	11	1	25	13
	1915–1916		10	2	14	24
Ash	1914–1915		10	2	13	25
	1915–1916		11	1	10	28
Sulphates	1914–1915		12	0	24	14
	1915–1916		12	0	26	12
Chlorine	1914–1915		12	0	26	12
	1915–1916		11	1	22	16
Ammonia	1914–1915		9	3	26	12
	1915–1916		10	2	25	13

We have therefore now obtained a means of direct comparison between the quantities deposited in the years under consideration

A greater number under A + B in any period indicates a smaller deposit, a greater number under C + D a greater deposit, and we need only examine, say, the C + D column, since the A + B column is simply the complement of the C + D

Considering now the C + D column and comparing the summer of 1914–15 with that of 1915–16, we note that tar, soluble loss on ignition, and chlorine showed a slightly greater deposit in 1915–16 than in 1914–15 Insoluble carbonaceous matter other than tar, insoluble ash and sulphates show no alteration, while total solids, soluble ash, and ammonia were in greater quantity in the year 1914–15

It should, however, be mentioned that the number of stations available for the summer comparison was only 12 hence too much weight must not be put on the above conclusions

Looking at the columns comparing the winter months for the two years, we have a more reliable set of figures, as these are obtained from 38 stations We find here clear evidence of increase in the amount of atmospheric pollution, total solids, tar, insoluble ash, soluble loss on ignition and ash, chlorine, and ammonia have all increased in quantity in 1915–16 The only evidence of reduced deposits in 1915–16 is in the case of insoluble carbonaceous matter other than tar and sulphates

In the following table the stations giving the highest recorded mean monthly deposit as well as the lowest during the whole year April, 1915, to March, 1916, have been selected —

Mean Monthly Deposit, 1915–16, in tons per square kilometre

—	Highest		Lowest	
Total solids	Oldham	29 35	Malvern	1 81
	Manchester—Ancoats Hosp	23 94	Birmingham, S W	6 82
Tar	Glasgow—Bellahouston Park	0 41	Malvern	0·003
	London—Embankment Gardens	0 38	Manchester—Bowdon	0 01
Carbonaceous other than tar	Oldham	5 28	Malvern	0 17
	London—Embankment Gardens	4 64	Manchester—Bowdon	0 46
Insoluble ash	Oldham	16 48	Malvern	0 27
	Manchester—Ancoats Hosp	11 09	Manchester—Bowdon	1 69
Loss on ignition of soluble matter	Glasgow—Alexandra Park	4 89	Malvern	0 49
	Victoria Park	3 68	B'ham, S W	0 63
Soluble ash	London—Embankment Gardens	7 20	Malvern	0 88
	Manchester—Bowdon	6 56	York	2 26
Sulphates (SO_3)	Glasgow—Alexandra Park	3 52	Malvern	0 40
			York	1 19
	Blythswood Square	3 45	B'ham, S W	1 20
Chlorine	Manchester—Moss Side	1 54	Birmingham, S W	0 18
	Sheffield—Attercliffe	1 38	Malvern	0 19
Ammonia	Glasgow—Victoria Park	0 24	Malvern	0·02
	Alexandra Park	0·21	Exeter	0·03
	London—Golden Lane	0 21	Manchester—Queen's Park	0 03

It will be seen from this table that there is a great variation in the amount of deposited matter, the maximum being *ten* or more times the minimum It must, however, be borne in mind that Malvern station, which has the minimum deposit in every case except one, is a country station, situated at Malvern Wells, whereas the maximum deposits were invariably in cities Although it does not appear on this table, it is curious to note that the nine Glasgow stations provide examples, in the case of nearly all constituents, of deposits approaching the maximum and also the minimum This will be seen on examining Table IX, which gives mean monthly deposits for the summer and winter months separately

SEASONAL VARIATIONS

In order to examine the seasonal incidence of the various elements of deposit the following methods have been used In Table IV, as mentioned above, the six summer months are compared with the six winter months on the basis of mean monthly deposit This table throws into relief the broad distinction between summer and winter deposits

TABLE I —*Monthly Deposit at the Two Selected Stations, Oldham and Malvern*

—	Station	Rainfall in millimetres	Insoluble matter			Soluble matter		Total solids	Included in soluble matter		
			Tar	Carbonaceous other than tar	Ash	Loss on ignition	Ash		Sulphate as (SO_3)	Chlorine (Cl)	Ammonia (NH_3)
1915											
April	Oldham	43	0·26	4·70	17·01	2·89	6·47	31·33	3·05	0·85	0·11
	Malvern	17	0·01	0·12	0·14	0·27	0·53	1·07	0·21	0·11	0·01
May	Oldham	48	0·43	7·03	36·21	1·36	4·07	49·10	2·16	0·62	0·14
	Malvern	77	—	0·12	0·37	0·31	0·56	1·36	0·26	0·11	0·02
June	Oldham	70	0·29	6·15	20·80	1·69	5·63	34·60	2·12	0·65	0·17
	Malvern	36	—	0·30	0·47	0·41	0·69	1·87	0·34	0·10	0·01
July	Oldham	120	0·18	4·41	9·75	2·87	7·66	24·90	3·17	0·81	0·16
	Malvern	83	—	0·33	0·37	0·79	0·96	2·47	0·47	0·35	0·04
August*	Oldham	119	0·14	2·69	3·95	0·95	6·21	13·94	2·13	0·68	0·12
September	Oldham	17	0·10	3·98	11·37	0·90	2·36	18·71	1·10	0·35	0·08
October†	Oldham	42	0·22	7·97	16·24	3·04	5·40	32·87	2·82	1·09	0·23
1916											
January	Malvern	26	—	0·05	0·10	0·41	1·67	2·23	0·61	0·28	—
February	Malvern	85	—	0·08	0·20	0·52	0·82	1·62	0·41	0·25	—
March	Malvern	44	0·01	0·12	0·23	0·72	0·95	2·03	0·53	0·14	0·04

* Malvern sent no returns from August to December, 1915 inclusive
† Oldham discontinued observations after October

To ascertain, however, if there was any regular change from month to month or any obvious relation between the different elements of the deposit, it is clear that one station alone would be unlikely to provide the necessary indication of such relation, should there be any

It was therefore decided to compare the deposit for each month on the basis of an average for all stations for each particular month There was, however, the difficulty that the group of stations observing altered during the year owing to new stations commencing, or existing ones suspending, work, and if not allowed for this would obscure the true seasonal relation, should there be one

It was found that to select only those stations which were in operation from April, 1915, to March, 1916, would leave a very small group, owing to the reduction of stations occurring about the autumn of 1915 owing to the war If, however, the year from October, 1914, to September, 1915, were taken, it provided a group of about 22 stations operating through the whole period, and as this period there fore promised more useful information as to seasonal incidence and relation between the various elements of pollution it was chosen for the purpose

This variation in the number of observing stations is one of the difficulties which the Committee has had to cope with The Committee believes that if the authorities which are coöperating realised this fact they would make a greater effort to maintain their observing stations, at least until the completion of current years on March 31st

It will be convenient now to consider each of the constituents, or elements, of pollution separately, and for this purpose reference must be made to Table IX and the graphs in Fig I

From this table the following list has been prepared showing the months of highest and lowest deposit for each element of pollution, together with the rainfall for comparison It must be kept in mind that Table IX and the graphs in Fig I are prepared from the averages of the monthly deposits of all stations included, the number being given in the table so that except so far as weather variations between the different stations may obscure the result, a fair idea is given of the seasonal incidence of the different elements of pollution and their relation to each other

Table showing the Months of Highest and Lowest Deposit for each Element of Pollution, October, 1914, to September, 1915 Prepared from Average of 23 Stations

—		Highest	Second highest	Lowest	Second lowest
Rainfall		Dec	July	March April June	—
Tar	Insoluble	,,	,,	Sept	Aug
Carbonaceous		July	Dec	,,	April
Ash		June		Aug	Nov
Loss on ignition	Soluble	Dec	Jan	June	March
Ash		,,	Feb	,,	April
Total solids		,,	May	Aug	Sept
SO_3		,,	Jan	June	April
Cl			Feb	,,	Sept
NH_3		Jan	Nov	March	,,

It will be seen from this that loss on ignition and ash of the soluble matter, as well as sulphates, make their highest deposit in December, their second highest in January or February, and their lowest in March, April, or June, thus corresponding closely with the months of greatest and least rain fall It is clear, therefore, that there is some relation between the deposit of soluble matter and rainfall, this will be even more apparent on examining the curves and will be referred to later

Tar and total solids have their greatest deposit in December and least in September and August

The other remaining constituents do not lend themselves to any grouping, but it may be noted that, there is a general tendency for maximum deposits to occur in the winter months and minimum deposits in summer The most notable instance of a maximum deposit in the summer months is that of insoluble ash, and this is more remarkable than the mere examination of the above list would indicate Referring to the graph, Fig I, it will be seen how evident is the increase of this deposit in the fine weather Doubtless the favourable conditions for the production of dust from roads and other sources accounted for this

In last year's Report it was stated that ammonia showed itself as a summer product, this conclusion does not hold good for the period at present under consideration, as it appears that the greatest deposits occurred in January and November, the lowest in March and September Whether the conditions have altered in any way owing to the restrictions on the use of raw coal as a fuel, which are coming more and more into force, it is not possible to say at present, but it is of interest to remember that we are now really comparing the winter of 1914 with the summer of 1915, for the reasons already indicated It may be that when fuel consumption has attained a "steady state" the summer preponderance of ammonia will again appear Or again a comparison of, e g, the summer of 1915 with the winter of 1916 may give an indication of the cause, since if the diminishing use of raw coal is having an effect it should be brought out by such comparison, as in that case it would tend to increase the summer preponderance of ammonia over the *following* winter It is necessary in this connexion to keep in mind the point already referred to in describing Mr Tankard's experiments under "Analyses," which deals with the variation in the amount of ammonia present arising from the growth of organisms in the water collected

TABLE II—*Comparison of Monthly Means for all Stations for the Six Months, April to September, 1914 and 1915*

—	April to September	Rainfall in millimetres	Metric tons per square kilometre									No of months used for average
			Insoluble matter			Soluble matter		Total solids	Included in soluble matter			
			Tar	Carbonaceous other than tar	Ash	Loss on ignition	Ash		Sulphate as (SO$_3$)	Chlorine (Cl)	Ammonia (NH$_3$)	
Birmingham Central	1914	53	0·16	3 87	11 18	1 45	4 85	21 51	1 96	0 81	0 45	5
	1915	79	0 23	2 08	6 29	0 80	2 30	11 70	1 00	0 40	0 06	1
Bolton	1914	117	0 12	2 37	6 15	5 00	6 47	20·05	3 07	1 19	0 07	3
	1915	84	0 06	2 55	4 56	2 91	6 13	16 22	3 13	0 96	0·06	5
Exeter	1914	53	0 05	1 78	3 33	0 96	1 71	7 82	0 59	0 25	0·01	6
	1915	46	0 02	1 30	3·07	1·01	2 23	7 63	0 95	0 22	0·02	6
Kingston upon Hull	1914	42	0 10	3 38	4 13	1 49	3 19	12 29	1 39	0 40	0·03	6
	1915	46	0 11	3 13	3 83	2 18	3 31	12 56	1 65	0 35	0·04	6
Liverpool	1914	60	0 63	2 59	8 19	3 19	4 23	18 83	2 33	0 75	0 21	6
	1915	63	0 19	4 22	8 91	1 93	4 36	19 62	2 39	0 59	0 15	6
London — Meteorological Offices	1914	60	0 05	1 71	3 56	1 71	2 39	9 43	1 22	0 61	0 09	6
	1915	62	0·09	0 72	2 84	2 82	3 70	10·08	1 65	0 72	0 08	6
Embankment Gardens	1914	26	0 38	5 51	7 04	0 95	4 70	18 58	1 11	0 50	0 03	5
	1915	55	0 41	5 04	8 38	2 79	6 89	23 60	2 74	1 21	0 13	6
Finsbury Park	1914	30	0 11	2 87	6 15	1 80	3 60	14 53	1 81	0 40	0·07	1
	1915	48	0 13	1 85	6 16	0 84	2 60	11 59	1 20	0 34	0·03	6
Ravenscourt Park	1914	22	0 01	0 55	1 47	0 26	1 10	3 39	0 36	0 30	0 03	1
	1915	52	0 07	1 42	4 51	1 05	2 95	9 99	1 46	0 30	0 09	6
Southwark Park	1914	19	0 05	3 27	6 73	0 32	3 26	13 63	1 35	0 37	0·05	1
	1915	56	0 12	2 56	6 85	1 93	5 24	16 71	2 98	0 53	0 11	6
Wandsworth Common	1914	10	0 02	0 54	1 31	1 25	2 76	5 88	1 25	0 41	0·01	1
	1915	39	0 05	0 90	3 48	0 72	4 69	9 83	—*	—*	—*	6
Victoria Park	1914	30	0 05	0 99	2 29	2 49	6 61	12 44	3 00	0 73	0 04	1
	1915	50	0 07	1 51	4 62	1 94	4 18	12 32	2 17	*0 50*	*0 10*	6
Golden Lane	1914	31	0·04	2 17	3 52	1 20	2 51	9 42	1 33	0·45	0 11	6
	1915	64	0 06	3 06	4 70	1 74	3 65	13 22	2 05	0 64	0 18	6
Malvern	1914	46	0 01	0 24	0 40	0 57	0 97	2 22	0 40	0 19	0·03	6
	1915	53	—	*0 22*	0 34	0 44	0 68	1 69	0 32	0 17	0 02	4
Manchester — Cheadle	1914	72	0 10	2 04	2·00	1 50	3 18	8 76	1 47	0 74	0 06	2
	1915	60	0 14	1 99	3 37	1 33	2 32	9 16	1 39	0 72	0·09	5
Davyhulme	1914	64	0 03	0 99	2 00	1 15	2 78	6 94	1 57	0 62	0·03	2
	1915	54	0 02	0 99	3 37	1 26	4 03	9 67	2 32	0 46	0·08	6
Fallowfield	1914	78	0 04	1 05	2 06	0 86	2 54	6 53	1 45	0 52	0 05	2
	1915	54	0 04	1 16	3 30	1 08	4 04	9 62	1 99	0 35	0·04	6
School of Technology	1914	86	0 11	3 68	7 26	1 90	5 47	18 43	2 66	1 25	0 10	3
	1915	60	0 16	3·04	9 71	1 50	4 85	19 26	2 39	0 63	0·08	6
Whitefield	1914	89	0 04	1 44	3 29	1 35	4 73	10 85	2 20	0 77	0·06	2
	1915	60	0 03	1 74	4 46	1 65	4 16	12 04	2 53	0·48	0 06	5
Newcastle upon Tyne	1914	48	0 14	3 55	6 57	1 12	2 26	13 64	1 22	0 28	0 10	6
	1915	24	0 13	2 75	6 87	1·08	2 79	13 63	1 38	0 28	0·09	6
Oldham	1914	67	0 22	4 16	10 58	1 70	4 33	20 57	1 12	0 64	0 13	2
	1915	69	0 23	4 83	16 51	1 78	5 40	28 76	2 29	0 66	0 13	6
Sheffield— Attercliffe	1914	41	0 51	3 37	10 90	1 52	5 82	22 12	2 32	1 16	0 06	3
	1915	28	0 11	3 16	7 27	2 00	3 55	16 10	1 25	1 38	0·04	3
Hillsborough Park	1914	42	0 31	0 43	2 64	0 72	2 81	6 91	1·05	0 80	0·05	3
	1915	35	0·06	1 45	4 93	0 86	4 13	11 43	1 70	0 60	0·04	3
Meersbrook Park	1914	49	0 32	0 10	2 15	0·93	2 54	6 72	1 05	0 67	0·05	3
	1915	35	0·07	1 39	4 43	0 71	3 68	10 28	1 75	0 56	0 04	3
Weston Park	1914	44	0·48	0 73	3 60	1 21	3·05	9·06	1 14	0 67	0·06	3
	1915	35	0 05	1 51	4 81	1 13	3 35	10 85	1 65	0 66	0 04	3
York	1914	47	0 03	1 56	3·07	0 98	2 12	7 83	0 84	0 38	0 30	6
	1915	26	0·06	1·05	2 78	0 81	1 38	6·09	0 64	0 23	0 06	6
Greenock	1914	65	0 04	1 74	3 64	1 37	2 13	8 92	0 88	0 30	0·06	6
	1915	54	0·05	2 66	5·00	1 60	2 85	12 17	1 38	0 41	0 12	6
Leith	1914	34	0 06	1 19	2 73	0 95	1 31	6 25	0 69	0 18	0·07	6
	1915	56	0·05	1 26	3 34	2·08	2 63	9 36	1 13	0 23	0 11	6

* Results unreliable

TABLE III—*Comparison of Monthly Means for all Stations for the Six Months, October to March, 1914–15 and 1915–16*

—	—	Rainfall in millimetres	Metric tons per square kilometre									No. of months used for average
			Insoluble matter			Soluble matter		Total solids	Included in soluble matter			
			Tar	Carbonaceous other than tar	Ash	Loss on ignition	Ash		Sulphate as (SO_3)	Chlorine (Cl)	Ammonia (NH_3)	
Birmingham, Aston	1914–15	73	0·07	1·93	4·73	1·14	4·19	12·07	1·92	0·46	0·04	6
	1915–16	44	0·08	2·51	6·71	1·04	4·22	14·56	2·04	0·30	0·07	1
Birmingham S W	1914–15	84	0·04	0·77	1·99	0·63	2·60	6·04	0·97	0·42	0·02	6
	1915–16	49	0·04	1·00	3·06	0·83	3·56	8·49	1·70	0·24	0·04	1
Bolton	1914–15	121	0·11	1·99	6·41	4·49	9·64	22·63	4·62	2·02	0·10	6
	1915–16	89	0·08	2·78	6·31	2·52	6·06	17·74	2·73	1·71	0·08	2
Exeter	1914–15	88	0·04	1·54	2·86	1·72	3·79	9·94	1·43	0·86	0·03	6
	1915–16	103	0·02	1·43	2·12	1·57	3·60	8·74	1·67	0·77	0·03	6
Kingston upon Hull	1914–15	64	0·07	2·53	4·57	2·61	5·06	14·84	2·45	0·73	0·06	6
	1915–16	55	0·14	2·66	3·62	3·00	4·83	14·25	2·34	0·79	0·04	4
Leicester	1914–15*	—	—	—	—	—	—	—	—	—	—	—
	1915–16	82	0·22	3·89	4·96	3·52	4·72	17·31	2·31	0·58	0·16	5
Liverpool	1914–15	75	0·29	2·29	8·34	3·15	4·52	18·60	2·76	0·99	0·57	6
	1915–16	81	0·23	2·88	6·39	3·49	5·68	18·67	2·82	1·17	0·22	3
London — Meteorological Office	1914–15	64	0·14	0·85	4·38	3·91	4·98	14·26	2·20	0·92	0·06	6
	1915–16	69	0·13	2·43	4·97	2·70	6·75	16·99	2·46	1·06	0·09	6
Embankment Gardens	1914–15	66	0·23	3·39	7·31	1·84	7·43	20·21	2·90	1·30	0·07	6
	1915–16	63	0·35	4·05	7·53	2·58	7·67	22·17	3·58	1·22	0·09	4
Finsbury Park	1914–15	65	0·21	1·75	4·26	1·45	4·70	12·34	1·80	0·47	0·05	6
	1915–16	71	0·20	1·88	5·93	1·36	4·64	14·01	2·01	0·56	0·05	6
Ravenscourt Park	1914–15	64	0·05	1·06	2·85	0·99	4·32	9·28	1·70	0·44	0·06	6
	1915–16	71	0·10	2·04	4·57	1·68	5·47	13·86	2·78	0·45	0·09	5
Southwark Park	1914–15	75	0·09	3·27	6·27	1·58	6·60	17·81	2·81	0·70	0·09	6
	1915–16	69	0·16	3·64	7·32	2·65	7·08	20·85	2·98	0·76	0·10	6
Wandsworth Common	1914–15	56	0·03	0·88	2·51	1·41	5·16	9·99	2·44	0·53	0·04	6
	1915–16	59	0·07	1·05	3·01	0·91	3·37	8·40	1·57	0·57	0·03	5
Victoria Park	1914–15	66	0·05	1·27	2·74	1·66	5·34	11·07	2·52	0·54	0·05	6
	1915–16	57	0·05	1·11	4·45	2·42	7·05	15·07	3·52	0·61	0·06	6
Golden Lane	1914–15	73	0·08	3·20	5·06	2·58	5·46	16·28	3·02	0·88	0·14	6
	1915–16	74	0·08	3·39	4·85	3·17	4·89	16·37	3·03	0·88	0·24	6
Malvern	1914–15	53	0·00	0·13	0·25	0·63	1·03	2·05	0·44	0·29	0·01	6
	1915–16	52	0·00	0·08	0·18	0·55	1·15	1·96	0·52	0·22	0·01	3
Manchester — Ancoats	1914–15	78	0·11	4·47	11·57	1·95	8·69	26·79	4·19	1·13	0·08	3
	1915–16	27	0·11	5·60	11·91	2·48	8·64	28·74	4·03	1·13	0·10	1
Bowdon	1914–15	69	0·01	0·49	1·78	0·66	2·74	5·69	1·22	0·55	0·05	3
	1915–16	34	0·01	0·48	2·14	0·67	2·44	5·74	1·14	0·43	0·05	1
Davyhulme	1914–15	70	0·02	1·05	4·08	0·96	5·11	11·23	2·41	0·76	0·09	5
	1915–16	38	0·03	0·98	4·13	1·79	3·64	10·57	1·34	0·83	0·11	1
Moss Side	1914–15	75	0·14	2·01	5·86	1·44	6·15	15·60	2·77	1·04	0·09	3
	1915–16	38	0·12	1·90	6·25	1·44	5·42	15·13	2·61	1·08	0·08	1
Philip's Park	1914–15	71	0·11	3·06	7·74	2·12	7·33	20·35	3·39	1·39	0·05	3
	1915–16	30	0·06	3·42	9·74	1·84	7·21	22·27	2·12	1·10	0·06	1
Queen's Park	1914–15	74	0·08	1·86	7·38	1·24	7·15	17·71	3·37	1·10	0·04	3
	1915–16	55	—	—	—	—	—	16·78	—	—	—	4
School of Technology	1914–15	77	0·12	3·33	6·71	1·39	6·65	17·21	2·72	1·08	0·07	6
	1915–16	60	—	—	—	—	—	22·95	—	—	—	4
Whitefield	1914–15	87	0·04	1·46	5·41	1·47	6·92	13·29	3·24	1·25	0·41	5
	1915–16	36	0·06	1·61	4·95	2·29	4·80	13·71	1·90	1·03	0·05	1
Newcastle-on Tyne	1914–15	63	0·13	3·99	6·25	2·20	4·92	17·46	2·32	0·68	0·20	6
	1915–16	69	0·28	4·46	7·73	2·39	5·16	20·03	2·53	0·78	0·17	6
Oldham	1914–15	94	0·37	7·09	16·21	3·00	8·03	34·70	3·17	0·97	0·45	6
	1915–16	42	0·22	7·97	16·24	3·04	5·40	32·87	2·82	1·09	0·23	1
York	1914–15	62	0·11	1·56	3·46	1·59	3·42	10·25	1·67	0·69	0·45	6
	1915–16	49	0·15	1·38	2·49	2·60	3·14	9·76	1·75	0·64	0·09	6
Coatbridge	1914–15	70	0·09	1·55	3·40	0·91	1·94	7·89	0·95	0·27	0·08	3
	1915–16	61	0·08	1·65	3·65	1·51	3·64	10·53	1·63	0·57	0·12	6
Glasgow — Alexandra Park	1914–15	54	0·05	3·76	4·00	6·05	9·65	23·51	5·97	0·54	0·26	3
	1915–16	77	0·26	1·89	2·27	6·09	8·10	18·62	3·70	1·05	0·20	5
Bellahouston Park	1914–15	49	—	0·91	1·86	2·43	2·22	7·42	1·21	0·33	0·15	3
	1915–16	89	0·21	1·09	1·88	4·60	5·76	13·55	3·34	1·04	0·09	5
Blythswood Square	1914–15	67	0·02	5·60	4·22	4·53	7·25	21·62	3·87	0·35	0·29	3
	1915–16	90	0·31	2·42	3·28	4·69	7·38	18·08	4·45	0·88	0·19	6
Botanic Gardens	1914–15	66	0·06	1·68	3·41	4·09	5·84	15·08	3·26	0·31	0·13	3
	1915–16	101	0·29	1·95	3·12	6·36	8·20	19·93	5·16	1·26	0·16	5
Richmond Park	1914–15	69	0·03	1·53	3·30	5·36	4·36	14·59	3·21	0·28	0·12	3
	1915–16	94	0·32	1·60	3·03	5·57	6·87	17·38	4·73	0·89	0·25	5
Ruchill Park	1914–15	71	0·06	3·73	3·90	1·84	5·95	15·48	3·16	0·39	0·11	3
	1915–16	99	0·23	1·41	2·38	4·60	6·52	15·15	2·94	0·81	0·15	5
South Side Park	1914–15	62	0·03	2·56	2·26	1·25	2·49	8·58	1·72	0·23	0·20	3
	1915–16	95	0·22	1·37	2·24	4·07	5·61	13·52	3·90	0·85	0·14	5
Tollcross Park	1914–15	62	0·01	3·08	3·67	4·72	8·78	20·25	3·39	0·37	0·11	3
	1915–16	91	0·26	1·58	2·77	5·00	7·01	16·63	4·25	0·86	0·15	5
Victoria Park	1914–15	71	0·04	3·65	2·31	6·05	5·61	17·66	3·93	0·37	0·37	5
	1915–16	95	0·41	1·24	1·96	5·48	6·89	15·99	4·03	0·94	0·30	6
Greenock	1914–15	137	0·07	2·27	4·06	2·18	4·39	12·17	2·05	0·91	0·18	5
	1915–16	99	0·14	2·30	3·95	2·25	4·78	13·42	2·12	1·19	0·19	5
Leith	1914–15	38	0·06	1·35	3·66	1·73	2·64	9·44	1·19	0·48	0·17	5
	1915–16	50	0·06	1·16	3·12	2·27	3·32	9·93	1·67	0·58	0·18	5

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* Not working

TABLE IV —*Comparison of Monthly Means for all Stations for the Six Months April to September, 1915, and the Six Months October to March, 1915 16—i e, Summer and Winter Months*

—	—	Rainfall in millimetres	Metric tons per square kilometre									No. of months used for average
			Insoluble matter			Soluble matter		Total solids	Included in soluble matter			
			Tar	Carbonaceous other than tar	Ash	Loss on ignition	Ash		Sulphate as (SO_3)	Chlorine (Cl)	Ammonia (NH_3)	
Birmingham, Aston	Apl Sep	57	0 10	1 77	6 61	0 90	3 52	12 90	1 63	0 24	0·03	5
	Oct Mch	44	0 08	2 51	6 71	1 04	4 22	14 56	2 04	0 30	0 07	1
Birmingham, S W	Apl Sep	52	0 04	1 01	2 48	0 60	2 42	6 54	1 11	0·17	0 04	6
	Oct Mch	49	0·04	1 00	3 06	0 83	3 56	8 49	1 70	0 24	0 04	1
Bolton	Apl Sep	84	0 06	2 55	4 56	2 91	6 13	16 22	3 13	0 96	0 06	5
	Oct Mch	89	0 08	2 78	6 31	2 52	6 06	17 74	2 73	1 71	0 08	2
Exeter	Apl Sep	46	0 02	1 30	3 07	1 01	2 23	7 63	0 95	0 22	0·02	6
	Oct Mch	103	0·02	1 43	2 12	1 57	3 60	8 74	1 67	0 77	0·03	6
Kingston upon Hull	Apl Sep	46	0 11	3 13	3 83	2 18	3 31	12 56	1 65	0 35	0 04	6
	Oct Mch	55	0 14	2 66	3 62	3 00	4 83	14 25	2 34	0 79	0 04	4
Leicester	Apl Sep	65	0 05	2 61	4 69	2 38	2 51	12 24	1 30	0 30	0 10	5
	Oct Mch	82	0 22	3 89	4 96	3 52	4 72	17 31	2 31	0 58	0 16	5
Liverpool	Apl Sep	63	0 19	4 22	8 91	1 93	4 36	19 62	2 39	0 59	0 15	6
	Oct Mch	81	0 23	2 88	6 39	3 49	5 68	18 67	2 82	1 17	0 22	3
London —												
Meteorological Office	Apl Sep	62	0 09	0 72	2 84	2 82	3 70	10 08	1 65	0 72	0 08	6
	Oct Mch	69	0 13	2 43	4 97	2 70	6 75	16 99	2 46	1·06	0·09	6
Embankment Gardens	Apl Sep	55	0 41	5 04	8 38	2 79	6 89	23 50	2 74	1 21	0 13	6
	Oct Mch	63	0 35	4 05	7 53	2 58	7 67	22 17	3 58	1 22	0·09	4
Finsbury Park	Apl Sep	48	0 13	1 85	6 16	0 84	2 60	11 59	1 20	0 34	0 03	6
	Oct Mch	71	0 20	1 88	5 93	1 36	4 64	14 01	2·01	0 56	0 05	6
Ravenscourt Park	Apl Sep	52	0 07	1 42	4 51	1 05	2 95	9 99	1 46	0 30	0 09	6
	Oct Mch	71	0 10	2 04	4 57	1 68	5 47	13 86	2 78	0 45	0 09	5
Southwark Park	Apl Sep	56	0 12	2 56	6 85	1 93	5 24	16 71	2 98	0 53	0·11	6
	Oct Mch	69	0 16	3 64	7 32	2 65	7 08	20 85	2 98	0 76	0 10	6
Wandsworth Common	Apl Sep	39	0 05	0 90	3 48	0 72	4 69	9 83	—*	—*	—*	6
	Oct Mch	59	0·07	1 05	3 01	0 91	3 37	8 40	1 57	0 57	0 03	5
Victoria Park	Apl Sep	50	0 07	1 51	4 62	1 94	4 18	12 32	2 17	0 50	0 10	6
	Oct Mch	57	0 05	1 11	4 45	2 42	7 05	15·07	3 52	0 61	0 06	6
Golden Lane	Apl Sep	64	0 06	3 06	4 70	1 74	3 65	13 22	2 05	0 64	0 18	6
	Oct Mch	74	0 08	3 39	4 85	3 17	4 89	16 37	3 03	0 88	0 24	6
Malvern	Apl Sep	53	0 00	0 22	0 34	0 44	0 68	1 69	0 32	0 17	0 02	4
	Oct Mch	52	0·00	0 08	0 18	0 55	1 15	1 96	0 52	0 22	0·01	3
Manchester —												
Ancoats	Apl Sep	56	0 10	3 91	10 92	2 21	5 84	22 98	2 82	0 66	0·08	5
	Oct Mch	27	0 11	5 60	11 91	2 48	8 64	28 74	4 03	1 13	0 10	1
Bowdon	Apl Sep	60	0 01	0 46	1 62	0 99	7 25	10 33	1 34	0 28	0·04	6
	Oct Mch	34	0 01	0 48	2 14	0 67	2 44	5 74	1 14	0 43	0·05	1
Davyhulme	Apl Sep	54	0·02	0 99	3 37	1 26	4 03	9 67	2 32	0 46	0·08	6
	Oct Mch	38	0 03	0 98	4 13	1 79	3 64	10 57	1 34	0 83	0 11	1
Moss Side	Apl Sep	63	0 11	1 25	4 23	1 33	4 68	11 60	2 37	0 62	0·05	6
	Oct Mch	38	0 12	1 90	6 25	1 44	5 42	15 13	2 61	1 08	0 08	1
Philip's Park	Apl Sep	64	0 07	3 02	7 14	2 07	5 70	18 00	2 37	0 80	0·05	6
	Oct Mch	30	0·05	3 42	9 74	1 84	7 21	22 27	2 12	1 10	0 06	1
Queen's Park	Apl Sep	64	0·06	2 21	4 55	2·04	5 75	14 61	2 79	0 69	0·05	6
	Oct Mch	55	—	—	—	—	—	16 78	—	—	—	4
School of Technology	Apl Sep	60	0 16	3 04	9 71	1 50	4 85	19 26	2 39	0 63	0 08	6
	Oct Mch	60	—	—	—	—	—	22 95	—	—	—	4
Whitefield	Apl Sep	60	0 03	1 74	4 46	1 65	4 16	12 04	2 53	0 48	0·06	5
	Oct Mch	36	0·06	1 61	4 95	2 29	4 80	13 71	1 90	1 03	0 05	1
Newcastle on Tyne	Apl Sep	24	0 13	2 75	6 87	1 08	2 79	13 63	1 38	0 28	0·09	6
	Oct Mch	69	0 28	4 46	7 73	2 39	5 16	20 03	2 53	0 78	0 17	6
Oldham	Apl Sep	69	0 23	4 83	16 51	1 78	5 40	28 76	2 29	0 66	0 13	6
	Oct Mch	42	0 22	7 97	16 24	3 04	5 40	32 87	2 82	1·09	0 23	1
York	Apl Sep	26	0 06	1 05	2 78	0 81	1 38	6 09	0 64	0 23	0 06	6
	Oct Mch	49	0 15	1 38	2 49	2 60	3 14	9 76	1 75	0 64	0 09	6
Coatbridge	Apl Sep	53	0 10	1 77	4 45	1 10	1 97	9 39	1 15	0 21	0·10	6
	Oct Mch	61	0 08	1 65	3 65	1 51	3 64	10 53	1 63	0 57	0 12	6
Glasgow —												
Alexandra Park	Apl Sep	51	0 13	1 88	3 50	3 89	3 19	12 60	3 37	0 30	0 22	6
	Oct Mch	77	0 26	1 89	2 27	6 09	8 10	18 62	3 70	1·05	0 20	5
Bellahouston Park	Apl Sep	46	0 58	1 40	2 52	0 78	1 92	7 21	1 03	0 16	0·06	6
	Oct Mch	89	0 21	1 09	1 88	4 60	5 76	13 55	3 34	1 04	0 09	5
Blythswood Square	Apl Sep	52	0 13	1 64	3 73	2 01	4 34	11 85	2 46	0 21	0 18	6
	Oct Mch	90	0 31	2 42	3 28	4 69	7 38	18 08	4 45	0 88	0 19	6
Botanic Gardens	Apl Sep	49	0·41	1 89	2 83	1 13	2 51	8 77	1 39	0 14	0·06	6
	Oct Mch	101	0 29	1 96	3 12	6 36	8 20	19·93	5 16	1 26	0 16	5
Richmond Park	Apl Sep	51	0 12	1 61	3 39	1 79	3 01	9 94	1 56	0 15	0 14	6
	Oct Mch	94	0 32	1 60	3 03	5 57	6 87	17 38	4 73	0 89	0 25	5
Ruchill Park	Apl Sep	57	0 15	1 60	3 58	1 63	4 27	11 25	2 29	0·15	0 11	6
	Oct Mch	99	0 23	1 41	2 38	4 60	6 52	15 15	2 94	0 81	0 15	5
South Side Park	Apl Sep	52	0 10	1 05	2 46	1 15	2 15	6 93	1 34	0 13	0 03	6
	Oct Mch	95	0 22	1 37	2 24	4 07	5 61	13 52	3 90	0·85	0·14	5
Tollcross Park	Apl Sep	52	0 16	2 69	4 50	1 51	4 52	13 39	1 70	0 15	0·09	6
	Oct Mch	91	0 26	1 58	2 77	5 00	7 01	16 63	4 25	0 86	0 15	5
Victoria Park	Apl Sep	59	0 16	1 26	2 75	2 17	2 92	9 28	1·92	0 15	0 19	6
	Oct Mch	95	0·41	1 24	1 96	5 48	6 89	15 99	4·03	0 94	0·30	5
Greenock	Apl Sep	54	0·05	2 66	5 00	1 60	2 85	12 17	1 38	0·41	0 12	6
	Oct Mch	99	0 14	2 30	3·95	2 25	4 78	13 44	2 12	1 19	0·19	6
Leith	Apl Sep	56	0 05	1 26	3 34	2 03	2 63	9 35	1 13	0·23	0·11	6
	Oct Mch	50	0 06	1 16	3 12	2 27	3 32	9 93	1 67	0·53	0 18	5

* Results unreliable

TABLE V —*Classification*

April to September, 1915 Station	No of months	Rain fall in mm	Tar	Carbon aceous other than tar	Ash	Loss on igni tion	Ash	Total solids	Sul phuric acid	Chlo rine	Ammonia
Unit for classification			0·05	1	2	0 75	1 5	5	1	0 3	0 05
Birmingham, Central	1	79	C	B	C	B	B	B	B	B	B
,, Aston	5	57	B	B	C	B	B	B	B	A	A†
, S W	6	52	A	B	B	A†	B	B	B	A	A
Bolton	5	84	B	B	B	C	C	C	C	C	B
Exeter	6	46	A	B	B	B	B	B	A	A	A*
Kingston upon Hull	6	46	B	C	B	B	B	B	B	B	A
Leicester	5	65	B	B	B	C	B	B	B	B	B
Liverpool	6	63	C	C	C	B	B	C	B	B	C
London —											
Meteorological Office	6	62	B	A	B	C	B	B	B	B	B
Embankment Gardens	6	55	D†	D*	C	C	C	C	B	C	B
Finsbury Park	6	48	B	B	C	B	B	B	B	B	A†
Ravenscourt Park	6	52	B	B	B	B	B	B	B	B	B
Southwark Park	6	56	B	B	C	B	C	C	B	B	B
Wandsworth Common	6	39	B	A	B	A	C	B	Un	Un	Un
Victoria Park	6	50	B	B	B	B	B	B	B	B	B
Golden Lane	6	64	B	C	B	B	B	B	B	B	C
Malvern	4	53	A*	A*	A*	A*	A*	A*	A*	A	A*
Manchester —											
Ancoats	5	56	B	C	D†	B	C	C	B	B	B
Bowdon	6	60	A†	A†	A†	B	C	B	B	A	A
Cheadle	5	60	B	B	B	B	B	B	B	B	B
Davyhulme	6	54	A	A	B	B	B	B	B	B	B
Fallowfield	6	54	A	B	B	B	B	B	B	B	A
Moss Side	6	63	B	B	B	B	C	B	B	B	B
Philip's Park	6	64	B	C	C	B	C	C	B	B	B
Queen's Park	6	64	B	B	B	B	C	B	B	B	B
School of Technology	6	60	C	C	C	B	C	C	B	B	B
Whitefield	5	60	A	B	B	B	B	B	B	B	B
Newcastle on Tyne	6	24	B	B	C	B	B	B	B	A	B
Oldham	6	69	C	C	D	B	C	D*	B	B	B
Sheffield —											
Attercliffe	3	28	B	C	C	B	B	C	B	C	A
Hillsborough Park	3	35	B	B	B	B	B	B	B	B	A
Meersbrook Park	3	35	B	B	B	A	B	B	B	B	A
Weston Park	3	35	B	B	B	B	B	B	B	B	A
York	6	26	B	B	B	B	A†	B	A†	A	B
Coatbridge	6	53	B	B	B	B	B	B	B	A	B
Glasgow —											
Alexandra Park	6	51	B	B	B	D*	B	B	C	B	C
Bellahouston Park	6	46	D*	B	B	B	B	B	B	A	B
Blythswood Square	6	52	B	B	B	B	B	B	B	A	C
Botanic Gardens	6	49	D	B	B	B	B	B	B	A†	B
Richmond Park	6	51	B	B	B	B	B	B	B	A	B
Ruchill Park	6	57	C	B	B	B	B	B	B	A	B
South Side Park	6	52	B	B	B	B	B	B	B	A*	B
Tollcross Park	6	52	C	B	B	B	C	B	B	A	B
Victoria Park	6	59	C	B	B	B	B	B	B	A	C
Greenock	6	54	B	B	B	B	B	B	B	B	B
Leith	6	56	B	B	B	B	B	B	B	A	B

Un Unreliable

Indicates the letters representing the highest and lowest records for each element in the list of stations
† Indicates the second (if there is one) in Class A or Class D
Ammonia —* Exeter and Malvern equal † Birmingham (Aston) and Finsbury Park equal

In Table IV the summer and winter deposits are compared and if we eliminate from this any stations having less than 4 months observations in either summer or winter we find that a comparison of the amounts of deposit gives the following result

Comparison of Summer and Winter Deposit for Year April 1915 to March, 1916

—		Winter deposit greatest in Stations	Deposits equal	Summer deposit greatest in Stations
Rainfall		24	—	1
Tar	Insoluble	19	1	5
Carbonaceous	Insoluble	14	—	11
Ash	Insoluble	7	—	18
Loss on ignition	Soluble	23	—	2
Ash	Soluble	24	—	1
Total solids		23	—	2
Sulphates		23	1	0
Chlorine		24	-	0
Ammonia		18	2	4
—				

It must be kept in mind that we are now comparing the *number of stations* at which the summer or the winter deposit of any particular element of deposit had the preponderance, this is not a comparison of *quantity* deposited and would only be such if all stations had the same amount of deposit

We note at once that insoluble carbonaceous matter and ash again stand out, the latter as the only case in which the number of stations showing a greater deposit in summer than winter exceeded the number with greatest winter deposit, and the former approaching the same condition *In all* other cases the number of stations with greatest winter deposit greatly exceed the number with greatest summer deposit

It is to be carefully noted that no legitimate inference as to relation of rainfall and deposit can be drawn from these figures Doubtless the summer preponderance of insoluble ash is due to dust

RELATION OF DEPOSITS

Considering first the relation of the deposit of suspended matter to rainfall, it is clear from examination of Table IX and the graphs that there is a close relation between the deposit of soluble matter and rainfall, both rising or falling together We must, however, keep in mind the short period available and the possibility that further observations may not bear out this conclusion At the same time, the parallelism between the curves for rainfall, soluble loss on ignition, soluble ash, and SO_3 is too marked to pass over without notice

On Table IX are also given the deposits per 100 mm of rainfall, and in the last column is given the degree of variation in the figures—i e, the maximum divided by the minimum This column may therefore be read as showing the variation in the figures for any deposit in the form 1 to 4 4 for rain, 1 to 1 95 for tar, and so on

From the point of view of relation between rainfall and deposit we may look at the table in two ways First we may examine the deposits per 100 mm rainfall for the uniformity one would expect if the deposit was in any case a function of the rainfall The column $\frac{\text{maximum}}{\text{minimum}}$ provides an easy way of examining the degree of departure from uniformity We find thus that the greatest variation is in the insoluble ash—4 42, and the next greatest is insoluble carbonaceous—3 62 Chlorine shows a variation of 3 43, but this is misleading, as it is due to one exceptional figure, that for July, and if this were excluded the variation would be reduced to 1 6 Tar, soluble loss on ignition and ash, sulphates, and ammonia all have about the same variation—i e, 2 65 to 2 84 Total solids give a figure of 3 16

It would appear from this, therefore, that the soluble matter is more affected by rainfall than the insoluble the same conclusion as we arrive at from a study of the curves of monthly deposit

We may, however, examine the table in another way If rainfall governed the amount of any element of deposit then we should expect the figures giving the amounts deposited per 100 mm of rainfall to show greater uniformity than the original averages before converting to the 100 mm standard

On looking down the column $\frac{\text{maximum}}{\text{minimum}}$ the following facts stand out —There was during the year a variation in monthly rainfall of 1 to 4 4, thus

TABLE VI —*Classification*

October, 1915, to March, 1916 Station	No of months	Rain fall in mm	Tar	Carbon aceous other than tar	Ash	Loss on igni tion	Ash	Total solids	Sul phuric acid	Chlo rine	Ammonia
Unit for classification			0 05	1	2	0 75	1 5	5	1	0 3	0·05
Birmingham, Aston	1	44	B	B	C	B	B	B	B	B	B
" S W	1	49	A	B	B	B	B	B	B	A†	A
Bolton	2	89	B	B	C	C	C	C	B	D*	B
Exeter	6	103	A	B	B	B	B	B	B	B	A†
Kingston upon Hull	4	55	B	B	B	C	C	D	B	B	A
Leicester	5	82	C	C	B	C	C	C	B	B	C
Liverpool	3	81	C	B	C	C	C	C	B	C	C
London —											
Meteorological Office	6	69	B	B	B	C	C	C	B	C	B
Embankment Gardens	4	63	D†	C	C	C	D	C	C	C	B
Finsbury Park	6	71	C	B	B	B	C	B	B	B	B
Ravenscourt Park	5	71	B	B	B	B	C	B	B	B	B
Southwark Park	6	69	C	C	C	C	C	C	B	B	B
Wandsworth Common	5	59	B	B	B	B	B	B	B	B	A
Victoria Park	6	57	B	B	B	C	C	C	C	B	B
Golden Lane	6	74	B	C	B	C	C	C	C	B	C
Malvern	3	52	A*	A*	A*	A*	A*	A*	A*	A*	A*
Manchester —											
Ancoats	1	27	B	D	D†	C	D*	D†	C	C	B
Bowdon	1	34	A†	A†	B	A†	B	B	B	B	B
Davyhulme	1	38	A	A	B	B	B	B	B	B	B
Moss Side	1	38	B	B	C	B	C	C	B	C	B
Philip's Park	1	30	B	C	C	B	C	C	B	C	B
Queen's Park	4	55	B	B	C	B	C	C	B	C	A
School of Technology	4	60	C	C	B	B	C	C	B	C	B
Whitefield	1	36	B	B	B	C	C	B	B	C	B
Newcastle-on Tyne	6	69	D	C	C	C	C	C	B	B	C
Oldham	1	42	C	D*	D*	C	C	D*	B	C	C
York	6	49	C	B	B	C	B	B	B	B	B
Coatbridge	6	61	B	B	B	B	B	B	B	B	B
Glasgow —											
Alexandra Park	5	77	D	B	B	D†	D	C	C	C	C
Bellahouston Park	5	89	C	B	A†	D	C	C	C	C	B
Blythswood Square	6	90	D	B	B	D	C	C	C	B	C
Botanic Gardens	5	101	D	B	B	D*	D†	C	D*	C	C
Richmond Park	5	94	D	B	B	D	C	C	C	B	D†
Ruchill Park	5	99	C	B	B	D	C	C	B	B	C
South Side Park	5	95	C	B	B	D	C	B	C	B	B
Tollcross Park	5	91	D	B	B	D	C	C	C	B	C
Victoria Park	5	95	D*	B	A	D	C	C	C	C	D
Greenock	6	99	B	B	B	C	C	B	B	C	C
Leith	5	50	B	B	B	C	B	B	B	B	C

* Indicates the letters representing the highest and lowest records for each element in the list of stations

† Indicates the second (if there is one) in Class A or Class D

TABLE VII—*Totals of Classes A, B, C, D for Each Element of Pollution for Two Half Years, April–September, 1914 and 1915, for 12 Stations*

TABLE VIII—*Totals of Classes A, B, C, D for Each Element of Pollution for Two Half Years, October–March, 1914–15 and 1915–16, for 38 Stations*

TABLE VII

—	—	—	A	B	C	D
Insoluble	Tar	1914	3	7	1	1
		1915	2	7	2	1
	Carbonaceous other than tar	1914	0	8	3	1
		1915	2	6	3	1
	Ash	1914	0	8	3	1
		1915	1	7	4	0
Soluble	Loss on ignition	1914	1	10	1	0
		1915	1	9	2	0
	Ash	1914	2	8	2	0
		1915	2	9	1	0
	Total solids	1914	1	8	3	0
		1915	1	9	2	0
	Sulphuric acid	1914	6	7	0	0
		1915	3	9	0	0
	Chlorine	1914	4	8	0	0
		1915	5	6	1	0
	Ammonia	1914	4	5	1	2
		1915	3	7	2	0

TABLE VIII

—	—	—	A	B	C	D
Insoluble	Tar	1914–15	13	21	2	2
		1915–16	5	16	9	8
	Carbonaceous other than tar	1914–15	6	19	11	2
		1915–16	3	27	6	2
	Ash	1914–15	4	24	8	2
		1915–16	3	24	9	2
Soluble	Loss on ignition	1914–15	3	22	5	8
		1915–16	2	12	15	9
	Ash	1914–15	1	12	20	5
		1915–16	1	9	24	4
	Total solids	1914–15	1	19	16	2
		1915–16	1	15	20	2
	Sulphuric acid	1914–15	3	21	13	1
		1915–16	1	25	11	1
	Chlorine	1914–15	4	22	11	1
		1915–16	2	20	15	1
	Ammonia	1914–15	6	20	5	7
		1915–16	6	19	11	2

List of Stations used in Table VII

Birmingham, Central
Exeter
Kingston upon Hull
Liverpool

London —
Meteorological Office
Embankment Gardens
Golden Lane

Malvern
Newcastle upon Tyne
York
Greenock
Leith

List of 38 Stations used in Table VIII

Birmingham, Aston
" S W
Bolton
Exeter
Kingston upon Hull
Liverpool
London —
Meteorological Office Embankment Gardens Finsbury Park Ravenscourt Park Southwark Park, Victoria Park, Wandsworth Common, Golden Lane

Malvern
Manchester —
Ancoats Bowdon Davyhulme, Moss Side, Philip's Park, Queen's Park School of Technology, Whitefield
Newcastle upon Tyne
Oldham
York
Coatbridge
Greenock
Leith

Glasgow —
Alexandra Park, Bellahouston Park, Blythswood Square, Botanic Gardens, Richmond Park, Ruchill Park, South Side Park, Tollcross Park, Victoria Park

providing a sufficient range to bring out the effect of variation It is remarkable to note under these circumstances that in the cases of all elements of deposit, except chlorine and ammonia, there is much more uniformity in the original figures than in those reduced to 100 mm of rain In the case of insoluble carbonaceous matter and ash the original figures vary from 1 to 1 4 and 1 to 1 45 respectively, whereas when converted to deposit per 100 mm rain the range of variation jumps to 1 to 3 62 and 1 to 4 42, showing clearly that these deposits are no direct function of rainfall

The soluble matters show very little change in the range of variation Total solids give a range of 1 to 1 67 in the figures before, and 1 to 3 16 after, conversion to the 100 mm standard The total deposit is evidently therefore no function of the rainfall

Insoluble carbonaceous matter, other than tar, has its greatest deposit in July and the next greatest in December thus corresponding with the two highest rainfalls, but not exactly, since the highest rainfall was in December, whereas the highest deposit of insoluble carbonaceous matter was in July The minimum deposits occurred in September and April also corresponding to rainfall minima, but on the whole the relation is by no means so close as between rainfall and soluble matter, as will be seen from the curves

It may be well here to consider some of the difficulties in the way of establishing relations between the deposits —

(1) Since the soluble parts of deposits are apparently related to the rainfall more closely than the insoluble, it is clear that variation in the rainfall at different stations would disturb the relation between soluble and insoluble deposits at these stations, hence an average of stations is open to this objection On the other hand, no single station could be assumed to be representative of all, in the nature of its deposit

(2) The nature of the deposit and the proportions of the different elements of pollution vary from station to station, so that there will be a tendency for stations with excessive deposits to

TABLE IX —*Average Deposit of Each Element of Pollution for Each Month for Selected Group of 23 Stations for the Year from October, 1914, to September, 1915, showing also the Deposit per 100 Millimetres of Rainfall*

Rainfall in mm Deposit in tons per K²

	Number of stations observing	22 1914 Oct	23 Nov	21 Dec	22 1915 Jan	22 Feb	23 Mar	22 April	23 May	22 June	22 July	21 Aug	19 Sept	Max. Min
	Rainfall, average	39	77	136	85	83	31	31	53	31	103	72	36	4 4
Insoluble	Tar average	0 11	0 107	0 17	0 11	0 114	0 11	0 11	0 128	0 097	0 14	0·096	0 087	1·95
	,, per 100 mm rain	0 282	0 139	0·125	0 13	0 138	0 355	0 355	0 242	0 313	0 136	0 133	0 242	2 84
	Carbonaceous, average	2 43	2 30	2 76	2 12	2 16	2 11	2·07	2 52	2 28	2 77	2 69	1·97	1·4
	,, per 100 mm rain	6 23	3·0	2 03	2 50	2 60	6 8	6 67	4 76	7 35	2 69	3 74	5 47	3 62
	Ash, average	5 02	4 56	6 266	4 85	5 06	6 21	5 80	5 83	6 30	5 17	4 326	4 60	1·45
	,, per 100 mm rain	12 86	5 92	4 60	5 70	6 10	20·00	18 70	11·00	20 30	5 02	6 02	12 8	4·42
Soluble	Loss on ignition, average	1 65	1 95	2 54	2 34	1 97	1 40	1 62	1 68	1 125	2 00	1 43	1 51	2 26
	,, per 100 mm rain	4 23	2 53	1 87	2 76	2 38	4 52	5 22	3 17	3 63	1 95	1 99	4 20	2 79
	Ash, average	3 95	4 55	7 40	5 12	5 29	3 70	3 24	3 97	2 99	4 27	3 55	3 83	2 48
	,, per 100 mm rain	10 13	5 90	5 45	6 02	6 38	11 93	10 44	7 50	9 65	4 15	4 93	10 65	2 88
	TOTAL SOLIDS, average	13 2	13·45	19 13	14 70	14 60	13 55	12 80	15 60	12 80	14 25	11 476	12·00	1 67
	,, ,, per 100 mm rain	33 8	17 47	14 1	17 3	17 6	43 75	41 30	29 44	41 3	13 84	15 95	33 33	3 16
	Sulphates, SO_3, average	2 09	2 64	3 83	2 96	2 81	2 10	1 96	2 28	1 70	2 54	1 98	2·04	2 25
	,, per 100 mm rain	5 37	3 43	2 82	3 48	3 39	6 78	6 32	4 3	5 48	2 47	2 75	5 67	2 75
	Chlorine, average	0 495	0 747	1 29	0 74	0 834	0 494	0 50	0 54	0 360	0 485	0 574	0·37	3·59
	,, per 100 mm rain	1 27	0 971	0 95	0 87	1 01	1 60	1 61	1 02	1 16	0 47	0 80	1 03	3·43
	Ammonia, average	0 079	0 19	0 16	0 214	0 103	0·064	0 075	0 098	0·076	0·098	0 094	0·074	3 35
	, per 100 mm rain	0 202	0 25	0 118	0 252	0 124	0 206	0 242	0 185	0 245	0·095	0 130	0 206	2 65

TABLE X —*Average Deposit of Each Element of Pollution for Each Month for the London Stations only for the Year from April, 1915, to March, 1916, showing also the Deposit per 100 Millimetres of Rainfall*

Rainfall in mm Deposit in tons per K²

	Number of stations observing	8 1915 April	8 May	8 June	8 July	8 Aug	8 Sept	8 Oct	6 Nov	8 Dec	8 1916 Jan	7 Feb	7 Mar	Max Min
	Rainfall, average	26	70	18	92	67	46	39	61	111	37	73	81	6 2
Insoluble	Tar, average	0 106	0 15	0 099	0 16	0 115	0 12	0 146	0 243	0 10	0 08	0 17	0 10	3 04
	,, per 100 mm rain	0 407	0 214	0 55	0·174	0 172	0 261	0 374	0 398	0 09	0 216	0 233	0 124	6 1
	Carbonaceous, average	1 78	2 45	2 34	2 61	2 00	1 605	2 05	3 06	2 335	1 44	2 89	3 05	2 13
	,, per 100 mm rain	6 85	3 50	13 00	2 84	2 99	3 49	5 26	5·02	2 1	3 90	3·96	3 76	6 2
	Ash, average	5 63	6 05	5 46	5 44	4 40	4 17	4 58	8 23	3 86	3 9	6 41	5 72	2 13
	,, per 100 mm rain	21 67	8 65	30 35	5 92	6 57	9·06	11 75	13 5	3 48	10 54	8 78	7·05	8 73
Soluble	Loss on ignition, average	1 93	2 2	0 9	2·03	1 25	2·04	2 08	1 83	1 66	1 86	2 21	3 7	4 12
	, per 100 mm rain	7 41	3 14	5·00	2 21	1 87	4 44	5 33	3 00	1 50	5 03	3·03	4 57	4 94
	Ash, average	3 43	5 64	3 14	4 54	3 29	5 38	6 44	5 66	6 39	4 86	4 3	7 39	2 35
	,, per 100 mm rain	13 20	8 06	17 44	4 93	4 92	11 7	16 5	9 29	5 76	13 14	5 9	9 13	3 54
	TOTAL SOLIDS, average	12 86	16 45	11 97	14 8	11 06	13 3	15 3	19·03	14 35	12 12	15 94	19·96	1 86
	,, ,, per 100 mm rain	49 50	23 52	66 5	16 1	16 5	28 9	39 2	31 20	12 93	32 8	21 8	24 64	5 13
	Sulphates, SO_3, average	1 86	2 64	1 60	2 19	1 46	2 25	2 38	2 09	2 42	1 90	1 80	3 04	2·08
	,, per 100 mm rain	7 15	3 78	8 88	2 38	2 18	4 89	6 1	3 43	2 18	5 14	2 46	3 76	4·07
	Chlorine, average	0 52	0 77	0 395	0 59	0 85	0 50	0 66	0 55	0 775	0 81	0 86	0 86	2 18
	,, per 100 mm rain	2 00	1 10	2 20	0 64	1 27	1 09	1 69	0 90	0 70	2 18	1 18	1·06	3 44
	Ammonia, average	0 085	0 148	0·065	0 146	0 12	0·07	0 114	0·09	0·086	0 06	0·11	0 15	2 5
	,, per 100 mm rain	0 327	0 212	0 36	0 159	0 179	0 152	0 293	0 148	0 078	0 162	0·15	0 185	4 62

govern the nature of any relation brought out by averages

(3) The length of period considered is too short to justify any far reaching conclusions

On the whole, however, it may be expected that any general laws of relationship would apply equally to all stations and should be at least indicated by a consideration of the averages of stations such as we have just dealt with, and the results attained by the method seem to justify this conclusion

With a view to minimising the sources of error referred to under (1) and (2) the group of eight London stations were treated as in Table IX for the year from April, 1915, to March, 1916, with the result shown in Table X In this is also given the deposits per 100 mm of rainfall and the variation in each constituent From this table the following list has been prepared showing the incidence of maximum and minimum deposits during the year —

Months of Highest and Lowest Deposit for Eight London Stations April, 1915, to March, 1916

—		Highest	Second highest	Lowest	Second lowest
Rainfall		Dec	July	June	April
Tar	Insoluble	Nov	Feb	Jan	June March, Dec
Carbonaceous		,	March	Jan	Sept
Ash			Feb	Dec	Jan
Loss on ignition	Soluble	March	Feb	June	August
Ash		,,	Oct , Dec	,,	,,
Total solids		,,	Nov	August	June
SO_4		,,	May	,	,,
Cl		,,	Feb	June	Sept
NH_3		,,	May	Jan	June

FIG I

Average Deposit of each Element of Pollution for each Month for Group of 23 Stations Prepared from Table IX

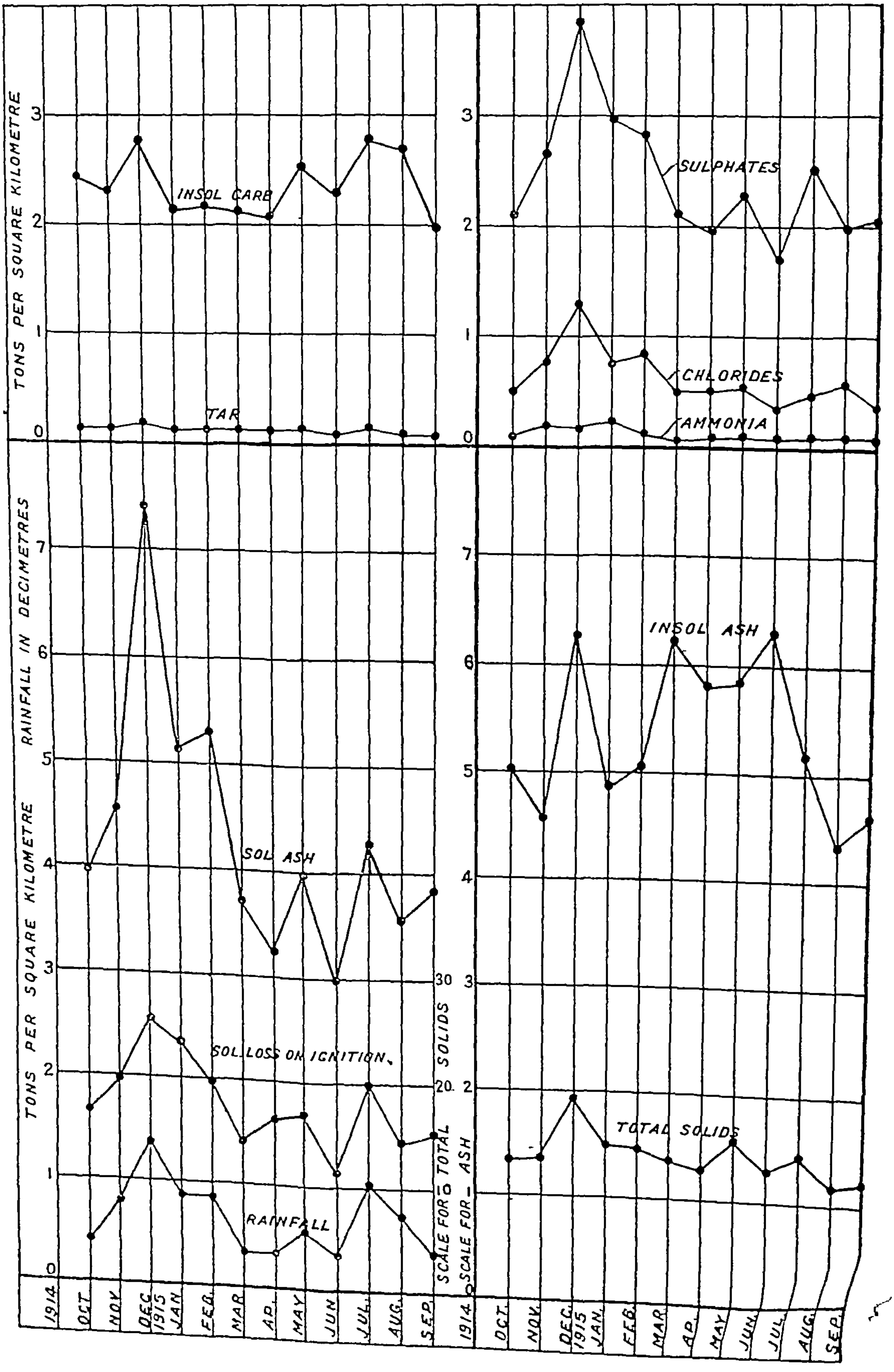
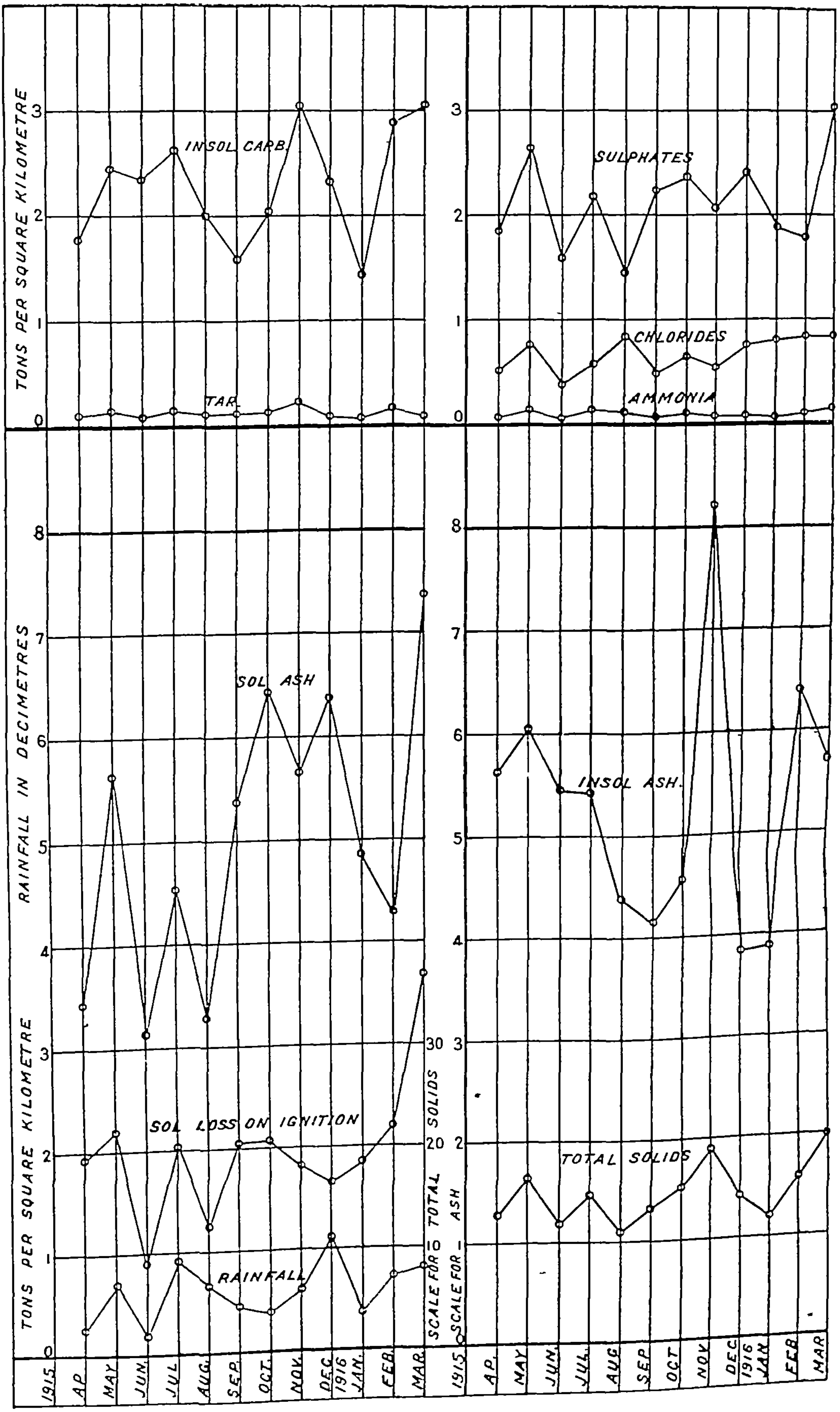


FIG II

Average Deposit of each Element of Pollution for each Month for Group of London Stations Prepared from Table X



The relations are here more obscure than when the larger number of stations were used While rainfall was greatest in December, no other constituent of the deposit had its maximum in December When these figures are plotted in curves they give very irregular results (Fig II) All that can be said is that the soluble constituents correspond more closely with the rainfall than do the insoluble It would seem on studying the curves, both in this case and Fig I, that for a while some relation holds good, perhaps for four or five months, and then suddenly it breaks down It looks as if there was some fundamental relationship overlaid by erratic occurrences which completely obscure it for a time

In the case of the London stations some such disturbance seems to have taken place about November, 1915, but what its nature was is not easy to say

Looking at the last column in Table X we again notice that insoluble carbonaceous matter and ash show less variation in the deposit before being converted to a uniform 100 mm rainfall, and this in spite of the fact that the monthly rainfall varies from 1 to 6 2 during the year considered All the other elements of deposit exhibit the same characteristic but in a less marked degree, thus bearing out the conclusion drawn from Table IX

Referring to the remarks made previously as to the seasonal incidence of ammonia it is interesting to note for the period April, 1915, to March, 1916, and for the group of London stations considered, that the summer months gave a mean monthly deposit of 0 106, while the mean for the following winter, October to March, was 0 102 ton per k^2, showing a slight preponderance of deposit during the summer The difference is not great enough to base any conclusions upon, but may be noted as indicating, if anything, a slight tendency for ammonia to be present in the water collected in greater quantity in summer than in winter

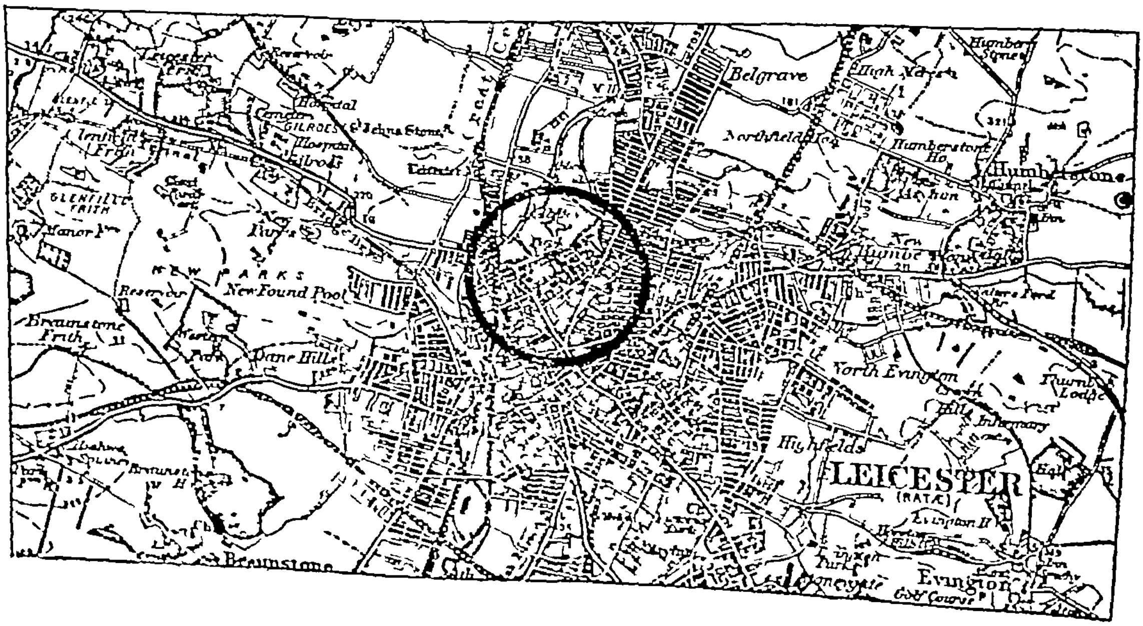
Speaking generally, the Committee feel that in a report of this nature their special duty is to place the statistics on record rather than attempt to deduce any far reaching conclusions at the present stage of the inquiry For the reasons already given, the tabular results are presented now in a somewhat abbreviated form and it has not been possible to analyse in detail the figures from every station It is hoped, however, that as accurate statistics are made available this will result in stimulating inquiry

MAPS OF DISTRICTS SHOWING POSITIONS OF THE STANDARD GAUGES

ADDITIONAL TO THE 17 MAPS GIVEN IN THE REPORT FOR THE YEAR 1914–1915

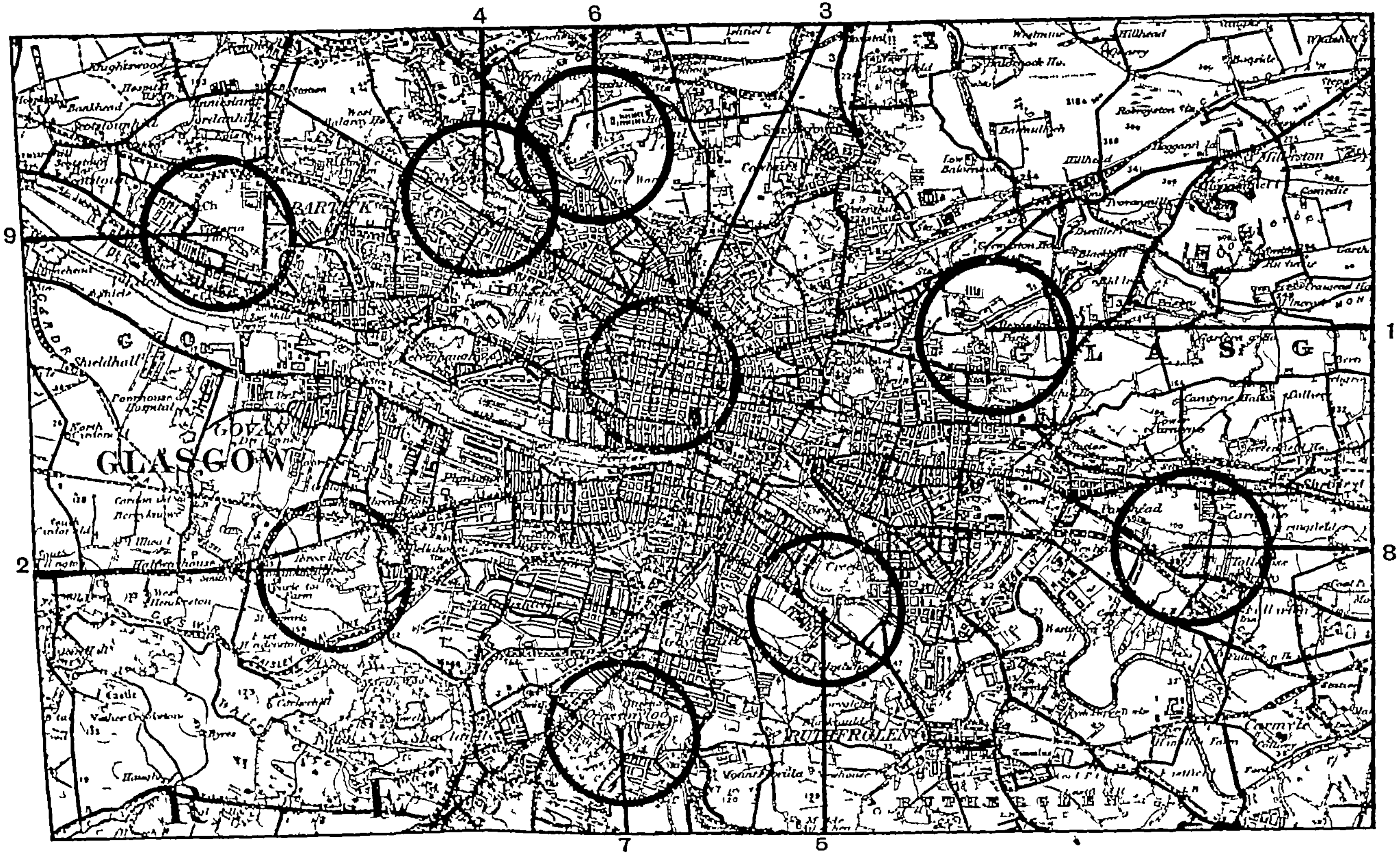
(*SCALE ONE INCH TO THE MILE*)

LEICESTER



GLASGOW

(1) ALEXANDRA PARK, (2) BELLAHOUSTON PARK, (3) BLYTHSWOOD SQUARE, (4) BOTANIC GARDENS, (5) RICHMOND PARK, (6) RUCHILL PARK, (7) SOUTH SIDE PARK, (8) TOLLCROSS PARK, (9) VICTORIA PARK



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Opolaxyl is a combination of the secretions of the liver (biliary) pancreas and intestines, with vegetable extracts of a non-drastic nature.

It combines all the secretions to correspond to nature's therapy and promotes a flow of bile and glycogen.

It is a normal regulator of the gastro-intestinal functions, consequently it improves the metabolic exchanges of the entire organism

Opolaxyl does not lose its efficacy by prolonged use, its effect is gentle and constant with the least irritation It is not merely purgative, it stimulates the defective organs and revives the normal equilibrium, it has a lasting effect because it builds the organs, thus correcting diminutional function

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DOSE—For obstinate constipation 2 or 3 tablets, afterwards 1 tablet every 3 or 4 days for a month.

E——— Scotland 9th Oct. 1917

DEAR SIRS—Having derived considerable benefit from the use of Opolaxyl tablets in my own personal case I write as a practising physician to ask if you would make any reduction of price in the event of my sending you an order for a fair quantity say one dozen bottles.

Yours faithfully
C. A—— M D

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DOSE.—2 to 6 teaspoonfuls daily

It purifies the Urine, and this action is due to its three principal properties

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INDICATIONS—**Arthritism, Gout, Gravel, Hepatic and Renal Colic, Rheumatism, Calculus &c, Phosphaturia, Urinary Antisepsis, Pyelitis, Bacteriuria, Cystitis, Prostatitis, Urethritis, Pyuria, Urinary Abscess, Vesical Catarrh, &c**

LITERATURE and CLINICAL REPORTS on REQUEST

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IMPROVED INTRAMUSCULAR INJECTION.

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Disappearance of the Pain
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This case was given three months life by a Specialist being inoperable

Yours faithfully
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RHEUMATISM
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(The only Authorised Preparation of Dr Barthe de Sandfort Various Imitations compel us to make this statement)

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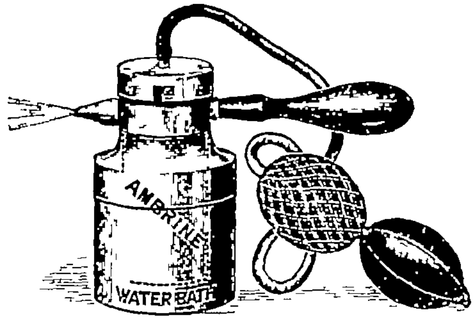
The most efficient means and method of ensuring active **Hyperthermal-Therapy** to the practical treatment of **Burns, Varicose Ulcers, Rheumatism, Gout, Arthritis, Neuralgia,** and similar affections



Although the dressing with AMBRINE is occlusive and adhesive, it becomes after a short period non adhesive, and can be removed without pain, hæmorrhage, or injury to the newly forming tissues The healing takes place without leaving scars or contraction

May be applied with a camel s hair brush, but our specially designed spray greatly facilitates the application of Ambrine, especially in the case of wounds or extensive surfaces

The
BRITISH MEDICAL JOURNAL,
Sept 2nd, 1916 —

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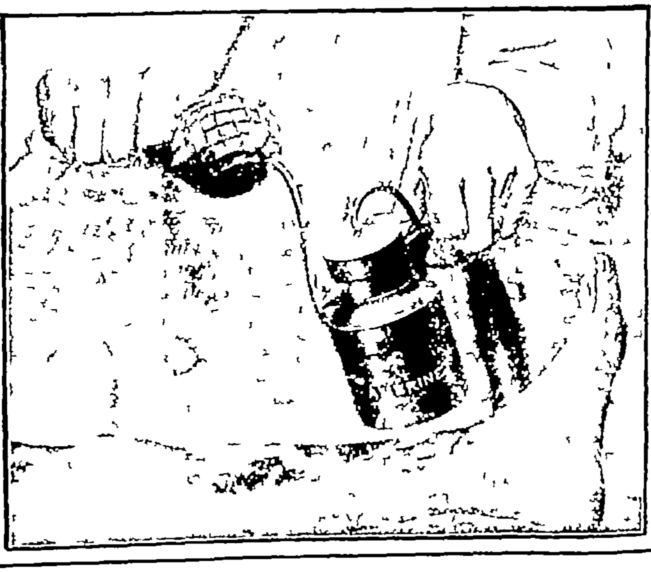
' The primary and quite incontestable advantages of the treatment are two it is agreeable to the patient, because entirely painless it is convenient to the surgeon because easily and quickly applied It is possible that the treatment would be useful in dealing with ordinary ulcers and in any case it is certain that the study of its application to the raw surfaces is worth pursuing

K—— co Tipperary
8th Oct 1917

Dr H—— returns thanks to the Anglo-French Drug Co Ltd. for the Ambrine, and found it very satisfactory Herewith enclose P O



THE LANCET,
June 10th, 1916 —

THE VALUE OF AMBRINE IN THE TREATMENT OF WOUNDS

Attention is being drawn to the remarkable success of the Ambrine Wax treatment now being used at the Hôpital St Nicolas at Issy les Moulineaux for burns frozen feet and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means The Minister of War in reply to the Deputy M. Mons as to why in view of the marvellous results obtained by treating burns and frost bites with Ambrine at the Hôpital St Nicolas, all the soldiers suffering from such wounds were not sent there stated that this was being done" as far as possible

---

The SCIENTIFIC TREATMENT of INFLUENZA and Allied Ailments.

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Non toxic, produces no ill results Easily taken (tablets) and well tolerated
Highly satisfactory clinical results

Not only a prophylactic against but a specific in **INFLUENZA,**
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H M S —— 27 7 17

SIR —I enclose P O for the tube of Kinectine The drug has given every satisfaction
W B H W Surgeon R N
The Anglo-French Drug Co Ltd Holborn London, E.C

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THE ANGLO-FRENCH DRUG CO, Ltd., Gamage Building, LONDON, E C 1
(Late M BRESILLON & Co)
Telegrams "AMPSALVAS, LONDO
Telephone HOLBORN 1311

THE LANCET.

LONDON SATURDAY OCTOBER 27, 1917

The Position of Practice under the National Insurance Act

A CONFERENCE of Representatives of Local Medical and Panel Committees of Great Britain was held in London on Oct 18th under the auspices of the British Medical Association A year had gone by since the last Conference, and some of the points at issue then were found to have been cleared up, while the focus of interest has shifted in regard to others The perennial difficulty in grasping the working of the "central pool" has remained in spite of the persuasive memorandum issued by the Insurance Commissioners, and the recent Conference decided without hesitation to ask the Commissioners to allow six representatives of the Insurance Acts Committee of the British Medical Association to assure themselves, with the aid of an actuary, that all the money received on account of medical benefit did really find its way into the medical practitioners' pockets In this connexion the existence of "inflation" of the panel list and its effect on medical accounts was fully recognised, being understood more readily in view of the growing familiarity with the process in other departments of life Admittedly there is less inflation in the case of munition centres than in other areas but no action was taken in the direction of pressing for preferential treatment of panel practice in urban areas The Conference was unanimous in wishing to be assured that the total pool was correct, but was not squeamish about its distribution On the contrary, a keen sympathy was expressed with the difficulties of the rural practitioner, which are at their greatest in Scotland (cf p 656) During the year a Rural Practice Subcommittee has been at work considering the special hardships of rural panel practice Two of these hardships have been sadly accentuated during the past 12 months The discharged service man in the country cannot attend personally at his doctor's dispensary, but must be visited, it may be at a great distance The cost of petrol has gone up by leaps and bounds without corresponding increase in the mileage allowance The rural practitioner's time is as valuable as that of his colleagues, and whether or no the mileage allowance covers the out of pocket expenses of his journeys, he has at all events to bear unrequited the expenditure of time involved

The Conference confirmed by an overpowering majority the decision of the Insurance Acts Committee of the British Medical Association in regard to the payment for attendance on the disabled service man by visit instead of on a capitation basis In so doing there was apparently no intention of reversing the doctrine that the capitation fee is the ideal system for medical treatment of an insured population Under whatever other treatment—specialist, training, re educational —the disabled man comes, the capitation fee, if it does nothing else, ensures his surveillance by his own family doctor The arrangement was regarded by the Conference, as by the Insurance Acts Committee which made it, in the light of a temporary expedient in order to elucidate the question whether the disabled soldier is likely to be a more considerable charge on the practitioner's time and skill than his average panel patient Since the decision was made, however, various factors have come in to complicate the situation With some of these we deal on pp 655 6 Treatment by general and V A D hospitals of disabled men as out patients, if it becomes the general policy of the Pensions Ministry, may result in taking this work so completely out of the hands of the practitioner that the fees earned per visit may work out, in fact, less than a capitation fee on the old lines, and this whatever may be the decision of the voluntary staffs of hospitals in regard to their own remuneration The principle of the capitation fee was, indeed, vindicated by the unanimous vote of the Conference to empower the Insurance Acts Committee to press for an increase of the capitation fee to a sum of 10s per insured person, this sum to cover increased liabilities in regard to discharged sailors and soldiers, as well as all services now rendered to tuberculous patients by panel doctors The steadily increasing cost of living and of carrying on practice makes this decision a logical one, in spite of the attitude taken up a year ago not to press the matter on patriotic grounds The increased cost to the Insurance Commissioners of raising the capitation fee was stated to be about half a million pounds, the increase implying a rise of 43 per cent on the panel practitioner s present income, or an addition of £3 per week on a panel of 1000 It is to be hoped that this rise may equitably solve even the difficulties of the rural practitioner in regard to mileage and petrol

The scheme for collective bargaining drawn up by the Insurance Acts Committee of the British Medical Association, as well as its application of the principle during the past twelvemonth, met with the general approval of the Conference, although a small but vocal section expressed its dissatisfaction with the representation of its views by the Committee, not on personal grounds but on the basis of political expediency It was argued that negotiations affecting the panel service should be carried on by direct representatives of the statutory panel committees, and that for this purpose an association of panel committees or a panel medico political union would be more appropriate than a committee of the British Medical Association This movement is an interesting one for a more stringent trades unionism within the medical profession at a time when the Labour Party itself has just taken the step of extending the basis of its representation, and it may not be unfair to compare the constitution of the British Medical Association with that of the reconstituted Labour Party T divergence of opinion on the part of this section of the Conference did not prevent it being perfectly clear that the Insurance Acts Committee of the British Medical Association commands the confidence and support of panel practitioners in general The Committee is not directly under the control of the Association, the present Conference has chosen half of its elected members, and its constitution can still be further amended The Committee has earned approval by consistent endeavour to further the interests of the medical profession at large, and by its efforts to consult the constituency on all important negotiations whenever delay did not endanger the successful carrying through of these negotiations Collective bargaining has become an approved method in panel practice with the Insurance Acts Committee as the bargainer

New Limbs for Old

THE early weeks in the installation of a new head at the Pensions Ministry are justifying its claim to be regarded as a Ministry of Restoration The Statutory Pensions Committee which bequeathed to the Ministry its well organised Local Pensions Committees found prime difficulty in the fact that the great dearth of labour made it possible for almost every discharged man to get work without training, and the men therefore generally did refuse training and went to work without The new Ministry has been concerned to make such generous terms with disabled men undergoing treatment and training that military compulsion could not have been a more potent inducement to them to become effective workers In an admirable article in the October number of "Recalled to Life," the editor, Lord CHARNWOOD, relates his own conversion to this view, and his general survey of the whole subject of disablement will serve to clear the minds of a wide circle of readers The practice of orthopædics has received further impetus from the visit of the American orthopædic surgeons under the leadership of Dr JOEL GOLDTHWAIT, of Boston, and from the institution by the Pensions Ministry of an experimental institute to evolve appliances to help disabled men

The problem of designing artificial limbs which will really assist men in their work was the subject of an important discussion this week at the Medical Society of London Major R C ELMSLIE dealt chiefly with the designing and fitting of artificial limbs on the basis of the work at Roehampton He showed typical examples of this work, which represents an immense mechanical advance on pre war methods Mr E MUIRHEAD LITTLE devoted his remarks chiefly to the adaptation of amputation stumps to the artificial limbs they were designed to carry End pressure and leverage, the two important factors to consider, have quite different values for the upper and lower limbs Artificial limbs for the lower extremity are a comparatively simple matter, their use is limited and definite all that is required is that the appliance shall be strong and reasonably light, that it shall give good stability in standing, and that the gait shall be natural Prosthesis for the upper limb is another matter An artificial arm must be a real working tool Only in the professional classes and for æsthetic reasons will an artificial arm which is passive and of no practical use be worn In order that appliances suitable for all classes of the community may be at hand it will be necessary to have either a number of different models or else a model made in standardised interchangeable parts, by assembling which appropriately a limb can be made which is adapted to the needs of any trade or profession The materials and mechanism should be such as to secure lightness with strength, and if it is possible without losing efficiency the shape should closely resemble that of the natural limb It might be thought that the artificial arm was necessarily a passive appendage, hanging by its attachment to the stump but possessing no active mobility of its own This, however, is not true, at least three movements can be transmitted from the chest and shoulder to the artificial limb, and these can be utilised to produce active flexion of the artificial elbow joint, locking and unlocking of this joint, and opening and closure of the fingers of an artificial hand, or of a grip which replaces it All these requirements and possibilities serve to indicate that the design of an artificial arm is a complex mechanical problem really requiring for its solution the consideration of a mechanical engineer of technical ability and experience The necessities of war surgery have enlisted the assistance of engineers in this direction, and the address on "Mechanical Artificial Arms," delivered by Mr E W HOBBS, A I N A, at the Junior Institution of Engineers, on Oct 15th, embodied the results of two years' experimental work This work was originally undertaken at the instigation of Major ELMSLIE, and the results attained indicate both the complexity of the problem and the success that can be reached if mechanical ingenuity and experience work in coöperation with surgical advice A simple arm can now be supplied which enables its bearer to do the hardest manual work, even to the swinging of a sledge hammer, while in a few minutes this same arm can be rendered sightly and mechanical movements added making it suitable for a professional man Even when the whole limb is lost at the shoulder joint an artificial limb can be fitted capable of voluntary movement at both shoulder and elbow, and of great use to a clerk or for other light occupation

But the problem of artificial arms is not solved with the invention of a suitable appliance and its adjustment to the patient There are complaints abroad, and well founded ones, that men to whom artificial arms are supplied do not use them in their work The reason for this state of affairs is threefold. In some few cases the arm is useless for the man's particular work in others the arm is uncomfortable because it is unsuitable or is a bad fit, but most often the real reason is that the man has never learnt to use his arm, in his trade to its best advantage An artificial arm is a tool, its use must be learnt, just as is the case with any other tool Some men will realise this of their own accord and will set to work to learn the proper use of their limb, but others think that the artificial arm is going to replace the natural one without any effort of adaptation upon their part Such men must be taught to use their limb by an actual training, first in the general use of the artificial arm, and then in its adaptation to their special trade Until an artificial arm has been tested by such methods as these it should not be condemned as useless It would seem that provision for training in the use of artificial arms, either in the hospitals which fit the limbs, or else in local schools or workshops, is required if much of the money which is being spent upon these appliances is not to be thrown away, and if the full work of the armless man is to be secured A Bill is before Parliament for the representation on Local Pensions Committees of the disabled men themselves, and we trust that they will give careful attention to this need

Annotations.

Ne quid nimis "

THE INVESTIGATION OF ATMOSPHERIC POLLUTION

WE publish this week in a special supplement the second report of the Committee for the Investigation of Atmospheric Pollution, the observations recorded being those made during the year 1915–16 The first report appeared in our columns of Feb 26th, 1916, but since that date an important change has been made in the whole scheme of investigation The work is now done under the ægis of the Meteorological Office and the original committee has been constituted an "Advisory Committee on Atmospheric Pollution" to that office The undertaking thus receives official recognition and properly enjoys a status which association with an important Government department confers The committee has received from the Department of Scientific and Industrial Research a *grant in aid of the expert work involved in the investigations*, and thus the pecuniary assistance needed to carry on the practical work should be assured. The *present position is one on which* the pioneers of the movement are heartily to be congratulated it amounts to a well deserved official recognition of work instituted and sustained by what was hitherto a purely voluntary body

In the present report many interesting observations are made, though the reduction in the number of observers, that has taken place owing to the demands of the war has curtailed activities in some directions But, as is appositely pointed out, the connexion between atmospheric pollution and fuel economy is of vital importance just now, for such inquiry brings to light the loss of combustible matter represented by the soot suspended in the air The economic bearing, in other words, has assumed an increasingly serious aspect owing to the call for utilising the energy of coal on a more scientific basis This question is receiving the attention of the Fuel Research Board which, amongst other things, is considering whether the 35 to 40 million tons of raw coal which is used every year for domestic heating in this country, can be wholly or partially replaced by smokeless fuel, solid and gaseous, prepared by the carbonisation of this coal The importance of such an inquiry was urged long ago by the Committee for the Investigation of Atmospheric Pollution, and practical investigations have abundantly shown what an appalling waste of fuel, with consequent pollution of the air and injury to health, our present methods of domestic heating involve In last year's report it was shown that taking the case of the County of London alone the total quantity of matter deposited from the air during the year was approximately 54,200 tons, practically all derived from coal smoke The present report shows, broadly, that far from an improvement having been effected, there has been at certain seasons of the year a heavier deposit in 1915–16 than in 1914–15 A detailed analysis of these cases is set out in the report and they afford an interesting study of the probable causes which underlie the variations in kind and amount of the deposit collected at different seasons To quote examples showing the months of highest and lowest deposit for each element of pollution prepared from an average of 23 stations, we find that the items, loss on ignition and ash of the soluble matter, as well as sulphates, show the highest deposit in December, the second highest in January or February, and the lowest in March, April, or June, thus corresponding closely with the months of greatest and least rainfall This clearly establishes a relationship between the deposit of soluble matter and rainfall Tar and total solids have their greatest deposit in December and least in September and August Generally speaking, maximum deposits occur in the winter months and minimum deposits in summer It is suggested that a preponderance of insoluble ash in the summer may be accounted for not by smoke pollution, but by dust, and the soluble matter is more affected by rainfall than the insoluble There is a mass of valuable material in this report, and it represents careful work in many directions, but there are still some factors missing, and this fact precludes positive assertions being made as to the exact meaning of the results at the present stage of the inquiry For example, the fact that measuring *deposited* impurity cannot provide complete information as to the degree of atmospheric pollution is admitted in the report To some extent such estimation leaves out all consideration of more or less permanently *suspended* matter, and particularly gases, such as sulphur dioxide and ammonia In dry weather these gases would not reach the gauge The attention of the committee is being given to this matter The statistics placed on record by the committee are, however, extremely instructive, and as further work is carried out the results obtained will bring nearer the possibility of making the conclusions definite

THE COMING MINISTRY OF HEALTH

Mr Bonar Law, Chancellor of the Exchequer stated in the House of Commons last week that the creation of a Ministry of Health is under the consideration of the Government, but that at present no general solution of many obvious difficulties had been agreed upon In these circumstances it is clearly wise not to introduce a Bill, but we cannot help feeling that a discussion in the House might tend to remove some of the causes of discord Steps are being taken, the House was informed by Mr Bonar Law, under which agreement will be ensured among those who are actively engaged in the work of national health We do not feel certain that those steps will have that result, the whole medical profession is included "among those who are actively engaged in the work of national health," and considerable divergence of opinion seems to mark their views as yet For example, a large number of those most critical in days gone by of the working of the National Insurance Act are now prepared to regard that Act more favourably, they would give to the National Insurance Commission a predominant part in the future Ministry of Health Dr W A Brend, on the other hand, will have much support for the views which he puts forward in the current number of the *Edinburgh Review* He premises in a short essay on the future of the Public Health Services that experience of the working of the Insurance Act has shown that measure to be seriously defective, and considers that it is an open secret that the National Insurance Act has not fulfilled in many directions what was hoped of it The creation of a Ministry of Public Health is certain to take place, though the difficulties in the way of so important a piece of Parliamentary work are immense at the present moment We trust that there will be no long delay, but we realise that to undertake so critical a piece of work, when due opportunity is wanting for full consideration of the accompanying difficulties, would not be promptitude on the part of any Government, but only mischievous yielding to the view of the muddler that something had better be done, whether for good or for evil As we have pointed out several times in these columns, the position of National Insurance presents considerable difficulties to the designers of a Ministry of Public Health The general view, and one which we have endorsed, is that the Local Government Board should become the over authority for National Insurance, but Dr Brend believes that the office of the Registrar General should be enlarged and should take over the work of the Insurance Commissioners as well as the whole scientific and statistical work in public health at present performed not only by the Local Government Board but by the Home Office and the Board of Education We admit that the Department of the Registrar General could make a good claim if its scope were widened and its staff reinforced by experts, but we remain of opinion that if the National Insurance Commission does not remain a separate bureau, its right place is in a Ministry of Public Health, forming a department of the Local Government Board, and working in that department alongside of the machinery now employed to discharge the medical work of the Home Office and the Board of Education There seems no doubt that we must not expect any concrete proposals from the Government for the creation of a Ministry of Public Health just yet, but this appears to us to be no reason why matters that require immediate reform should remain unattended to until a vague and future date We are glad to learn that it is the intention of the President of the Local Government Board to ask the War Cabinet to allow him to introduce a Bill into the House of Commons immediately, so that it should be passed before Christmas, to deal with the many questions concerned with infant welfare It is evident from his reply to recent deputations that he sees no need whatever to wait for the introduction of a measure to deal with certain existing evils until the Ministry of Health Bill, and he incidentally corrected a mistake made by Mr Kingsley Wood in a letter recently published in the *Times*, who had used the argument for the establishment of a Ministry of Health that it would "save a thousand lives a week" Mr Wood put that prediction into the mouth of Lord Rhondda Lord Rhondda really said that he hoped that a Maternity and Infant Welfare Bill would save a thousand lives a week Dr Brend, in the *Edinburgh Review*, misrepresents Lord Rhondda in exactly the same way

THE HARVEIAN ORATION

Professor R Saundby, in the Harveian Oration which we print in another column, considers Harvey's work in relation to the scientific knowledge and the university education of his time, especially university education in medicine Harvey himself was a pensioner of Gonville and Caius College, Cambridge, where he entered in May, 1593, being then 16 years of age, and where he took his baccalaureate three years later He then left Cambridge to study medicine at the University of Padua, where there was at the time a famous medical school, and while it is admitted that Harvey was the true discoverer of the circulation of the blood, it is fairly clear that our famous British philosopher did not owe so much to his English as to his Italian university, where many eminent philosophers were congregated at the beginning of the seventeenth century, and where he probably acquired the methods of research which led him to his great discovery Professor Saundby's dissertation is largely about other people than Harvey, and forms an interesting chapter of medical history

ACUTE NEPHRITIS WITHOUT ALBUMINURIA

Dr Carl Müller, of Christiania, has recently recorded[1] an interesting case of acute nephritis in which albuminuria was absent during the greater part of the attack

The patient, a factory girl aged 26, was ill with ' kidney disease' for two months in 1914 In 1916 she had a sore throat and kept to her bed for a fortnight, the urine was free from albumin and no diphtheria bacilli were found on examination of a swab from the throat After this she had headache and shortness of breath, with palpitations and a troublesome dry cough, a week later her face and hands swelled and she had pains in the back Dr Müller examined the urine and found no trace of albumin in it The girl was living in miserable surroundings and was taken into hospital Here she was found to have slight œdema of the legs, with a high blood pressure (185 mm Hg), an irregular pulse of 60, slight hydrothorax and ascites, and a small trace of albumin in the urine when Heller's test was applied No formed elements could be found in the centrifugalised urinary deposit A few days later the percentage of urea in the blood was observed to be raised, standing at 0 025 per cent The patient had severe headache, dyspnœa, and vomiting for the first 24 hours, with anorexia On the fourth day she was put on to a salt-free diet of vegetables, bread, milk, tea, and water, and improved considerably The œdema and fluid exudations were absorbed, the urine increased from nearly two to over four pints a day and the blood pressure fell to the normal The trace of albuminuria vanished after a week, at no time could cells or casts be discovered in its centrifugalised sediment A Strauss test applied to the kidneys later showed that the renal excretion of both salt and water was normal

Discussing this case, Dr Müller comments on the extreme rarity of the instances of acute nephritis without albuminuria recorded in the pre war medical literature In trench nephritis, or in war nephritis as he prefers to call it, absence of albuminuria has often been recorded even in instances in which uræmic convulsions have occurred, and he points out that his recorded case in many ways resembles one of war nephritis The attempt has been made to explain some of these cases of œdema without other evidence of renal disease as due really to lack of vitamines in the food, the absence of nervous symptoms makes this explanation improbable Again, it has been suggested that the lack of albuminuria in acute nephritis may be due to patchy involvement of the renal tissue with failure of the inflamed portions to secrete any urine, Dr Müller thinks this explanation untenable, in view of the high blood pressure met with in such patients He comes to the conclusion that acute nephritis without albuminuria is commoner in civil practice than is generally suspected

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[1] Tidsskrift f d Norske Laegeforening Christiania, 1917 xxxvii., 451

THE VINDICATION OF A MEDICAL REPUTATION

Dr S D Clippingdale points out that Nov 6th is the anniversary of what he describes as a "tragedy in the annals of English obstetrics," the delivery and death of H.R H. the Princess Charlotte of Wales The untoward event is thus announced in a *London Gazette Extraordinary* issued at the time —

> Her Royal Highness the Princess Charlotte of Wales was delivered of a stillborn male child at nine o'clock last night, and about half past twelve Her Royal Highness was seized with great difficulty of breathing, *restlessness, and exhaustion*, which alarming symptoms *increased till half past two* o'clock this morning, when Her Royal Highness expired

The Princess was in her twenty first year Her grandmother, Queen Charlotte, had been attended in her 13 confinements by a midwife, a Mrs Draper, with the happiest results When, however, the Princess Charlotte was known to be pregnant and an heir to the Throne anxiously desired, it was decided to take every possible precaution Hers was the first Royal accouchement to be attended by male practitioners Three were employed—Dr Mathew Baillie, Dr. John Sims, and Sir Richard Croft Of these, Sir Richard Croft was regarded as a specialist and controlled the case Croft, although he appeared as a maternity specialist, apparently possessed no medical qualification He was at Oxford for a short time, where Foster, in his "Alumni Oxonienses," describes him as "chirurgus privilegiatus," but mentions no degree He was not a Member of the Royal College of Physicians, was not upon the staff of any hospital, nor had he contributed anything to medical literature He was, however, a man of high social position and possibly his social position had something to do with his Court appointment He inherited a baronetcy conferred upon his ancestor by Charles II He married a twin daughter of Dr Denman, the famous obstetrician (to whose practice he succeeded) Dr Baillie, his colleague, married the other twin, so that there was a personal as well as a professional relationship between these gentlemen The Court wished the Princess's confinement to take place at Kensington The Princess, however, preferred Claremont, 15 miles away and, at that time, not easily accessible The labour was protracted and abnormal There was hour glass contraction of the uterus The infant was known to be dead some hours before it was born, yet no steps were taken either to remove it or to terminate labour The Princess was in an enfeebled condition from low diet repeated bleedings, and unrelieved bowels Finally there was post partum hæmorrhage A Mr Jesse Foot demanded a public inquiry, stating, upon the report of the nurse, that when the infant was born, all three doctors were fast asleep This, however, was denied by Dr Sims, who, in a letter which will be found in Playfair's "Midwifery," says "It has been said we had all gone to bed, but this is not a fact Baillie retired about 11 and I lay down in my clothes at 12, but Croft never left her room" A path is still shown at Claremont where Sir Richard Croft had walked up and down in agony not knowing what to do for the best, and Foot's statement that he went to bed is a libel By command of the king a post-mortem examination was made by Sir Everard Home and Sir David Dundas, who reported to the king that there was no evidence of neglect, but that everything had been done which "human science could devise or human skill effect" The event so preyed upon the mind of Sir Richard Croft that three months later he shot himself

COLD AND COLDS

THE bleaker days of early autumn have been accompanied with an abundant crop of colds, and the sequence is such a usual one that many people, perhaps the large majority, regard their catarrh as being directly caused by the reduction of temperature by what they call a chill The belief lacks proof, inasmuch as precaution is generally taken to avoid the reduced temperature by means of artificial heat in houses and offices and the closing of windows in railway carriages But this precaution introduces complicating factors The indoor air becomes more stationary and humid, air pockets are present in which little interchange occurs, there is a sharp dividing line between indoor air and outdoor air, and with these altered telluric conditions there is a tendency to crowd together and an increased nearness of contact in family life In one respect, however, the conditions ahead should be changed in the coming winter Fuel is dear and scarce, and it is both economical and patriotic to be sparing in its use This will mean a reduction in indoor temperature, and less difference between indoors and outdoors It will be worth noting whether the result is an increase or decrease of colds

THE King has nominated Dr J C McVail for a further period of five years a Member of the General Medical Council for Scotland

NEWS has been received of the death, at the age of 60 years, of Sir C Pardey Lukis, honorary surgeon to the King, who has held the position of Director General of the Indian Medical Service for a period of nearly eight years

THE Bradshaw Lecture of the Royal College of Physicians of London will be delivered at the College by Professor Ernest S Reynolds on Thursday, Nov 8th, at 5 o'clock the subject chosen being "The Causes of Disease"

THE Bradshaw Lecture of the Royal College of Surgeons of England will be delivered in the theatre of the College by Sir John Bland Sutton on Thursday, Nov 8th, at 5 P M, the subject of the lecture being 'Misplaced and Missing Organs

THE opening meeting of the Röntgen Society will be held on Tuesday, Nov 6th, at 8 15 P M., at the Royal Society of Arts The presidential address, on 'The Part Played by X Rays in the War,' will be delivered by Captain G W C Kaye M A, D Sc

DEPARTMENTAL COMMITTEE ON THE WELFARE OF THE BLIND

NOTES ON THE REPORT

BY ARNOLD LAWSON, F R C S ENG

AN immense amount of careful, patient, and thorough work is revealed in this report, which is a most complete and thorough exposition of a complicated national problem A cursory glance through its seventy odd pages shows this much, whilst it may be stated that there is not a paragraph which will not repay careful reading and thoughtful consideration. The various issues raised in the discussion of this large subject have each of them received ample attention by the division of the Report into 12 sections or heads followed by a general summary and conclusions

Definition —Statistics and Causation

These sections commence with the Report of the Royal Commission of 1889, followed next (Section II) by a most interesting outline of the scope of the problem This includes statistics and data with regard to the number and occupations of the blind and particulars of the present position as indicated by reports furnished by the various institutions devoted to helping the blind and by the Poor-law returns The section commences by defining blindness for the purpose of the Report In the case of children the definition adopted by the Elementary Education (Blind and Deaf Children) Act, that in this Act the expression "blind" means too blind to be able to read the ordinary school books used by children, is considered satisfactory The definition of blindness in adults has always been a difficult matter, as obviously it is a term that can be applied with fairness to a large number of those who still have a little sight, though insufficient to enable them to lead independent lives The Report decided to adopt the definition of blindness as expressed by the subcommittee of the Ophthalmic Section of the Royal Society of Medicine and adopted by the council of the section (1915), which suggested that "blind means too blind to perform work for which eyesight is essential" It is not likely that any will be disposed to question this definition as being fair, practical, and covering all debatable ground

The Report then goes on to deal with statistics as to blindness and the causes of blindness It points out that with regard to the number of the blind in this country the want of an exact definition as to the meaning of the term has made statistics very unreliable So far as can be gathered, there seems of late years to have been very little change for the better Ophthalmia neonatorum still claims its 10 per cent , but the returns only take us down to 1914, when notification first became compulsory It was suggested by an eminent authority in his evidence on this point that the disease had been practically stamped out in lying in hospitals, but possibly this rosy view will not bear very close investigation It is hard to believe that even the greatest care, and the adoption of every precaution, will suffice to stamp out this disease, which will annually claim a percentage of victims even at lying in hospitals It is to be hoped when returns are available that notification will have proved to have been of some benefit, but the value of notification must necessarily depend upon its reaction with regard to the practical treatment of the disease, and of that we have so far no record

Attention is called to the Report of the Royal Commission on Venereal Diseases, which came to the conclusion that over 50 per cent of all cases of blindness was due to venereal diseases That is undoubtedly a statement which every expert in this country will endorse It is a very serious state of things and will continue to be so in spite of all the new and successful treatment of syphilis until the country has made up its mind to treat the question of syphilis itself in some saner and more practical manner than seems at present likely

Occupational blindness—i e , resulting from injuries received in the course of various trades—should, the Report says, receive more energetic treatment of a preventive nature As a matter of proved fact, no force on earth short of compulsion by Act of Parliament will make the British workman adopt an attitude of common sense in this matter and wear protecting goggles at his work. The Report rightly suggests obligation, but does not mention who is to enforce it

The greater part of the remainder of the Report, until we reach the general conclusions and summary, is devoted to the practical solution of the questions appertaining to the welfare of the blind, and deals therefore with education in its various aspects of elementary, professional and industrial, workshops, and miscellaneous organisations It will be best to follow the Report over these various points by the consideration of the conclusions which follow them These form 12 most admirable pages containing a great deal of original thought, and though some of the conclusions are controversial and unlikely to be adopted as they stand, still they tend to flood the problem of the welfare of the blind with new light, and this undoubtedly will lead to great things in the near future

Central Control

It is noteworthy that the first three paragraphs of these conclusions tread on altogether new ground Placed before the consideration of any one question of education or training, and obviously put in this position in order to make them assume a capital importance, the committee recommend and have drawn up in these paragraphs a scheme of central control Let us see what this means in the words of the Report —

> "We have come clearly to the conclusion that the condition of the blind in the United Kingdom calls for the more active intervention of the State to secure (*a*) central control, organisation, and assistance for the existing agencies of voluntary help, which could be utilised with far greater effect if centrally directed, and (*b*) additional assistance for the blind"

Following this preamble comes the outline of the scheme Shortly it proposes the setting up of a special department known as the "Central Authority in the Ministry of Health," when and if such a Ministry be created, and in the meantime in the Local Government Board, its function to be the general care and supervision of the blind The work would necessarily involve a large financial outlay, partly to meet the expenses involved in starting the recommendations which the committee favour later on (initial capital expenditure) and partly to provide for upkeep (annual expenditure) Much of the money required would probably be, as regards the former item, met by special grants from the votes of the Education Department. The committee are of opinion that the most urgent and expensive essential in this respect is the provision of more workshop accommodation It calculates that about 3000 such shops at a cost of £100–£175 each are needed. involving an outside expenditure of about £500 000 The annual expenditure, it is explained, is extremely difficult to estimate It would be concerned in respect of grants to institutions and organisations for the blind, pensions, and any other purposes which might arise from time to time. It is considered that it would probably be covered by £250,000 per annum Passing on to the constitution of this proposed central authority the committee are of opinion that it should be carried out under the guidance of a strong advisory committee of persons associated with the care of the blind, the chairman of the advisory committee to be the Parliamentary secretary of the office in which the new department is established All matters of policy should be referred to this committee, whilst all executive functions should be exercised by the department working in accordance with the recommendations of the advisory committee.

Such briefly, is the scheme—a really big scheme, and undoubtedly the right one, and far ahead of anything that has hitherto been projected There can be no possible doubt that if the question of the welfare of the blind is to be seriously tackled with a view to permanent and progressive improvement coördination of effort is essential. Coördination of effort can only be obtained by centralisation of effort, and centralisation further means economy of effort. It is the only means of stopping or limiting overlapping of work and extravagance in finance The desirability of a central authority or board is therefore beyond question The practical application of the scheme is obviously controversial, as, for instance, the recommendations as to finance which are pious suggestions based on the theory that the wider you open your mouth the more you will get However that may be there is little doubt that if the principle of a central authority is adopted the money will be forthcoming from somewhere The intrusion of a Government official as the nominal head of such a board may be inevitable though it seems unfortunate It is not to be expected that he would have any special knowledge, and certainly the interference of the State in the management would not conduce, if past history is to be trusted, to the success of the scheme The ideal condition would be State aided but not State-controlled

Certain reservations have been appended to the scheme by some of the members of the committee One of these, dealing with the financial aspect, favours a system of State pensions, for which there is something to be said, but there are many obvious difficulties Even supposing that the greatest supervision is exercised, so that pensions are only granted to those properly qualified there still can be no guarantee that the money is laid out in a suitable way by the recipient, and, further, it is certain that once the pension had been granted it would be exceedingly difficult to take it away, or, in fact, to control it at all, supposing the pensioner should prove himself in the future unworthy of help In another reservation objection is made to the Exchequer being regarded as solely responsible for the necessary funds and a point is made that there are other classes, such as deaf mutes and the paralysed, for whom State aid could be demanded with equal force as for the blind There seems at the present juncture to be no special reason to open a controversy as to ways and means The main point is to establish a working basis and something on the lines suggested by the Report which all the members have signed will be found to be the right guiding principle for action in the future.[1]

Education and Training

The Report favours residential institutions rather than day centres for elementary education of young children, together with the employment of blind teachers whose salaries should be on an equality with those of sighted teachers.

These are two most important points With regard to the first the reservation made by three members that education in residential institutions is not desirable for the majority of *young* blind children has much force Institutional life, as pointed out in this reservation, is a poor substitute for home and family life and it is difficult to understand why a young blind child should be sent to a boarding school at an earlier age than a sighted child. It would, indeed, have been better if the Report had substituted "older for 'young,' or specified some age such as "after ten years of age" The value of blind teachers is a proved fact, and in the future it is hoped that the practice of teaching the blind by the blind will become as universal as it is practicable. The note as to the salary paid to the blind teachers is inspired by obvious fairness

Perhaps the most striking recommendation with regard to elementary education is the initiation of an after care scheme to enable the authorities to keep in touch with each child after leaving the elementary school until he or she can be transferred to the care of either the secondary education authority or to some recognised organisation for the blind. This is excellent

Professional and Industrial Training Workshops and Miscellaneous Organisations

Passing on to the training of adults in all its various phases the Report is extremely practical and this part can be recommended to the careful perusal of all those interested in the subject The following are of special importance.

(*a*) The committee is satisfied that the crux of the problem of the blind in the United Kingdom is the inadequacy of workshop accommodation The evidence is conclusive that the present accommodation should be doubled and even this may not be sufficient

(*b*) In addition inspection and standardisation of production must follow with a system of coöperative buying of raw material and selling of produce

(*c*) Persons who work at home should be visited and assisted in the purchase of materials and the marketing of their goods

(*d*) Particular attention is called to the employment of blind women who except in rare cases are unable to earn anything approaching an adequate wage.

(*e*) There is an urgent need for a central free library for the blind which, acting in coöperation with the home teaching societies and public libraries, would facilitate the circulation and distribution of books available and minimise the danger of unnecessary duplication in production

Each one of the above recommendations is both novel and excellent They all help to show the urgency of a central control authority, without which not one of them is practicable It is devoutly to be hoped that the institution of such a central driving force will not be shelved, and indeed it is not likely that such will be the case, seeing how the war has aroused the general interest of the nation in those who have suffered from it

The Report finishes its work with some recommendations with regard to the administration of the Poor law and pensions and a well-deserved note of confidence and approbation of the steps taken at St Dunstan's Hostel to ensure the welfare of our blinded soldiers and sailors Many of the recommendations of the committee with regard to the training of the blind are at the present time in force at St Dunstan's and are answering well

Place of Ophthalmology in Medical Education

Further, before closing I wish to note a reservation signed by Sir Arthur Downes, who once more desires to draw attention to the memorial to the General Medical Council from the Ophthalmological Society of the United Kingdom in 1891, which points out the desirability of a more general knowledge of ophthalmology by the general medical student it being 'notorious that the general body of the profession does not possess a competent knowledge of diseases of the eye."

That opinion unfortunately, holds as good to-day as in 1891 When will the universities and colleges realise the necessity for a forward move in this respect? This war has shown us many things, and none more clearly than this—viz. the general lack of knowledge of the treatment of eye diseases and injuries Many eminent experts in this branch of surgery are doing their utmost at this moment, and doing it well, but it is only the bare truth that a certain number of blinded men drift from hospital whose sight might at least have been partially saved if their cases had been understood or at any rate treated on proper lines The whole fault lies with the examining boards, the members of whom are admittedly entirely at sea in everything that appertains to ophthalmology, and who, therefore, can hardly be expected to examine students on this subject The students know this, and, having quite enough to do to deal with the subjects of which the examiners are cognisant, they or the greater number of them, simply neglect ophthalmology

NATIONAL INSURANCE ACT

Treatment of the Invalided Sailor or Soldier

MEMORANDUM 234/I C, setting out a scheme for the treatment of sailors and soldiers discharged as no longer physically fit for war service, was briefly summarised in THE LANCET of Sept 8th, p 404 The Memorandum was marked by the Insurance Commissioners who compiled it as being ' For Issue to Doctors," and since its appearance it has received careful attention at the hands of those members and sections of the medical profession likely to be most affected by it Its reception has not been favourable The medical practitioners who serve on the panels and who for the most part, have done so ever since the first National Insurance Act came into force, are not only interested in the matter to a greater extent than their non-panel colleagues, but having been constantly in touch with the practical aspects of the Insurance Acts are, to speak generally in the position of expert critics

The criticisms levelled at the Commissioners scheme are, in the first place, directed against the principle and details of the financial arrangements proposed, the main contention being to quote from a resolution of the Gloucestershire Panel Committee that ' while the machinery of the Insurance Act may conveniently be employed, the expense should be met by a Treasury grant, and should in no way fall upon Insurance funds ' To what extent the proposals of the Commissioners involve drawing upon Insurance funds for the provision of medical benefit for uninsured sailors and soldiers is not quite clear Correspondence which has passed between the Gloucestershire Local Medical and Panel Committee and the Commissioners shows that in the opinion of the latter the former body had misconstrued the intention of the Commissioners, and had not understood the source from which credits in respect of discharged sailors and soldiers are to be added to the central pool The correspondence, however does not state definitely that no money contributed by insured persons for the purpose of providing medical benefit under the Insurance Acts will be diverted towards medical benefit for uninsured sailors and soldiers And whether the discharged sailor or soldier has been insured or not the obtaining for him medical benefit in respect of injury or disease due to military service was not, it may reasonably be said, contemplated when the Act was passed, and was not provided for in it Objection is further taken by many to the institution of a system of payment per attendance in the place of a capitation system to be based upon a reasonable estimate of the services to be rendered

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[1] On Wednesday last, since this article was written, the Prime Minister has stated that the recommendations of the Departmental Committee will be favourably considered by the War Cabinet.

A second criticism of the payments per attendance proposed is that they are inadequate, and must take into account present and probable future conditions of high prices A further point at issue is the inclusion of non panel practitioners in the scheme in order that they may attend discharged sailors and soldiers only In any case they would benefit by the machinery of an insurance system with which they have refused before to have anything to do, and if any part of the moneys paid to them were derived from Insurance funds, it is contended, they would be receiving money contributed by insured persons and their employers and diverted from the remuneration of practitioners on the panel Memorandum 234/I C , in dealing with the projected inclusion of non panel practitioners, states that it is being brought about "at the request of the medical profession," but the panel committees complain that they have never been consulted at all before the new system was instituted This being the case, the practitioners who have worked, and are working, the Insurance Acts have not had any voice as a body in an expression of opinion ascribed to the "medical profession" It is a point which intimately concerns them, and upon which, and upon the introduction of payment per attendance, they can justly claim that they were entitled to be heard It is to be regretted that such a matter as the medical attendance of those who have suffered so much for their country should give rise to any controversy, but at the same time it is better that an understanding on the subject should be arrived at so far as it is possible at the outset It is highly undesirable that a new system should be initiated without the best possible prospect of smooth working

Insurance Practice in Scottish Rural Areas

A report on medical benefit in Scotland has been prepared, at the request of the Scottish Association of Insurance Committees, by Mr W M Marshall, its secretary and issued as a pamphlet of 48 pages (Motherwell, K Cameron and Co) A section of this report is devoted to the country doctor in Scotland and his difficulties

We may reproduce some passages from the letter of a rural practitioner —

"So long as the medical man is paid per capita the rural practitioner is very seriously handicapped In a town or village practice eight or ten visits at patients' homes can be overtaken in an hour In the country a whole hour may be consumed in visiting a single case The question of roads has to be considered Isolated cottages at considerable distances from the main roads are common, and it is often necessary to leave one's trap or car in the main road, even in the summer time, and accomplish the object on foot In winter, often for weeks at a time, the main roads are impassable through snow drifts, and to reach a patient many miles have to be covered on foot The dangers to be faced, the difficulties to be overcome, and the time lost have all to be considered in estimating the special disadvantages of rural practice Add to that the meagre and often uncertain financial return, and you will get some idea of the lot of the country doctor

It is generally assumed, the report comments that the remuneration of the country doctor for each member on his list is higher than that received by his town colleague in respect that he has fewer services to render and is more rarely called upon for treatment, but it is now certain that the visits by the country doctor are not less in proportion to his list than those made by the town or industrial doctor An examination is appended of the medical records furnished by 15 practitioners in Lanarkshire, three of whom were in practice in rural, two in mixed rural and industrial, and ten in industrial areas In the rural doctors' list 69 per cent are male insured persons and 31 per cent female, as against 79 per cent male and 21 per cent female in the industrial areas In regard to actual services rendered by the country doctor as compared with his industrial colleague, in the case of the first it stands at 4 07 (visits and consultations combined) for each person on his list, as compared with 4 37 for each person on the list of the industrial doctor But the average visits paid work out at 2 85 for every person on the list of the country doctor, and only 1 71 in the case of the industrial doctor The report admits that the evidence gleaned from these few practices is insufficient to justify definite conclusions, but the figures as a whole confirm the view that in justice to the country doctor some readjustment of the terms of service is necessary The figures for Lanarkshire are, indeed, much more favourable to the position of the industrial doctor than the figures for Scotland as a whole If special consideration is not given to these matters there may be increasing difficulty in securing the services of capable and energetic men for the country districts

Obituary.

JOHN GORDON SHARP, M D EDIN

Dr J G Sharp died suddenly from cerebral hæmorrhage on Oct 16th, at his residence, 9, Cavendish road, Leeds, aged 55 years

John Gordon Sharp received his medical education at Edinburgh University, where he obtained the Milner Fothergill Gold Medal in Therapeutics , at Owens College, Manchester, where he was research student in pharmacology, and at Paris and Berlin In 1891 he graduated M B , C M , at the University of Edinburgh, and five years later took the M D degree, for which he was commended About this time—namely some 22 years ago—he bought a practice in the Woodhouse and Meanwood Districts Leeds, and took an active interest in the medical needs of the community in which he had settled He was honorary surgeon to Beckett Home for Waifs and Strays and prominently associated himself in the establishment of the Southern Dispensary in Hunslet-road, which was afterwards amalgamated with the Public Dispensary in North street He was one of its first medical officers and continued to work up to the time the branch was closed owing to the difficulty of getting residents during the war Dr Sharp, who was a prominent pharmacologist, was a member and foreign corresponding secretary for the Section of Therapeutics and Pharmacology of the Royal Society of Medicine, and gained in 1910 the Hunterian Medal for an essay on ergot In October, 1915, he joined the R.A M C as a temporary lieutenant, and did 12 months' service in this country Relinquishing his commission he still continued to do war work at Chapeltown road Barracks and elsewhere until his death He was a frequent contributor to the *Journal of Anatomy and Physiology*, to the *Transactions of the Therapeutical Society* to the *Pharmaceutical Journal*, the *British Medical Journal*, and THE LANCET, his contributions to our own columns including an interesting paper on Intralaryngeal Therapeutics Dr Sharp leaves a widow and two daughters

DR J RAMBOUSEK,

PROFESSOR OF FACTORY HYGIENE, AND CHIEF STATE HEALTH OFFICER, PRAGUE.

WE regret to announce the death, at the age of 43, of Dr Rambousek He was recognised as one of the leading writers and workers on factory hygiene on the Continent and it was noteworthy how ably he seemed to combine the duties of professor inspector, and laboratory worker His industry in collecting material for anything about which he wrote was remarkable. He was best known by his book ' Gewerbliche Vergiftungen " which was translated into English and published by Edward Arnold in 1913 under the title of 'Industrial Poisoning From Fumes Gases and Poisons of Manufacturing Processes " In 1911 he made a short visit to England which he much enjoyed leaving behind him the impression of a delightful personality

Correspondence.

Audi alteram partem

SUCCESS AND FAILURE IN THE TREATMENT OF TUBERCULOSIS

To the Editor of THE LANCET

SIR,—In your leading article of Oct 20th on the above subject a curious mistake occurs in the citation of the Edinburgh Dispensary Scheme as if it represented a special method of *treatment* Coupling it with two other therapeutic procedures, the writer of the article goes on to say that "the hopes raised by these have died down" The reference is apparently to what has been called the Tuberculin Dispensary, with its restricted therapeutic outlook, and not to the Edinburgh Tuberculosis Scheme, for later on the article proceeds —

> The work of the Tuberculosis Dispensaries of our great cities and such an organised system of control as that under the direction of the Chair of Tuberculosis at Edinburgh are on the right lines

The purposes and scope of the Edinburgh Scheme are too familiar to call for detailed re statement now The erection of the Edinburgh Tuberculosis Dispensary in 1887 was a systematised attempt to utilise the discovery of the tubercle bacillus in the interest of public health Its purpose was to create a central institution which would deal with the varying aspects of tuberculosis The lines of its operations, its gradual development as the centre of a communal organisation against tuberculosis, and its several extensions in the sanatorium, the hospital, the tuberculosis school the farm colony, the care committee, &c. are well known They have been detailed in successive papers since the foundation of the dispensary onwards The principles and methods were endorsed by the Local Government Board for Scotland,[1] and subsequently by the Departmental Committee on Tuberculosis [2]

If as you say "a vast social *organisation* to deal with *tuberculosis* has been set in movement," is it wise or just to say that "gloom has fallen on the treatment of tuberculosis'? True for the moment, the large movement—like so many other social activities—is held up through the war Before the crash came, Local Authorities, Insurance Committees &c., throughout the country were beginning to collect and put together the component elements of a satisfactory machinery In some places the machine was almost ready, in others parts were missing, in few places—if in any—was it quite complete When war was declared, things were immediately stopped, and tuberculosis officers who had been appointed to drive the machine were called away by the exigencies of the moment for service with the troops The Local Government Boards have done something to keep men at the tuberculosis posts, but the major necessity has known no law The fact must not be lost sight of, however that the foundations of an efficient anti tuberculosis scheme have been laid A good deal of the superstructure exists, and in numerous centres work is being overtaken The 12 per cent increase in mortality from tuberculosis for 1915-16 does not seem to have occurred uniformly throughout the kingdom and a good deal might be said in explanation of the increase

Of remarkable significance in judging of the value of anti tuberculosis effort is the striking difference between the incidence of tuberculosis among the British troops and its incidence among the French troops Where we calculate in thousands, our gallant Allies have unhappily to reckon in tens of thousands At the present moment the medical service in France is at its wits end to adapt measures equal to the clamant needs with which they have to cope through the ravages of tuberculosis In attempting to determine why this extraordinary difference in the effects of war should present itself in the case of two neighbouring countries with similar civilisation it would be foolish to lose sight of the remarkable difference which existed prior to the war in respect of the coördination of antituberculosis measures An unprejudiced expert observer, Dr Hermann Biggs, puts the matter in a nutshell "In England," he says, 'the tuberculosis problem had been efficiently met before the war, in France, on the other hand, practically nothing had been done"

I am, Sir, yours faithfully,

Edinburgh Oct. 20th 1917 R W PHILIP

To the Editor of THE LANCET

SIR —I have read most carefully the leading article in your issue of Oct 20th, entitled "Success and Failure in the Treatment of Tuberculosis" The subject is of such importance that it is highly desirable that we should be clear as to what we want to do and how we want to do it Your leading article, however seems to me to leave the subject in a very confused condition You say —

> The keen hopes raised by the open air methods introduced from Nordrach, by the Edinburgh Dispensary Scheme, by the Frimley graduated exercises, have died down

And further on in the same paragraph —

> In spite of the vast amount of trouble and administrative machinery we have not kept pace with the disease

Am I not right in concluding that you think all these methods are failures? And yet towards the end of the article you say

> The mechanism of tuberculosis control is good and only requires to be properly applied The work of the tuberculosis dispensaries of our great cities and such an organised system of control as that under the direction of the Chair of Tuberculosis at Edinburgh are on the right lines

How can we reconcile these varying statements? Has not the Edinburgh scheme been under the personal control of the new professor since its inception? How can it be on the right lines and yet be a failure? Surely this and the other methods must be on the wrong lines

You seem to think the failure is due to the patient not applying for treatment until the disease is fully established My experience is that most cases do seek advice early, and are given cough bottles, being assured that they have not got tuberculosis if tubercle bacilli are not found in their sputum You blame the patient for refusing to go to a sanatorium when it has just been stated that the sanatorium method is a failure You state that the practitioner cannot devote enough time to make an early diagnosis What methods do you want the doctor to use? Physical signs such as light percussion or auscultatory signs? Do you think these are reliable methods in the stage it is desirable to make the diagnosis? Are X rays available and always reliable in this earliest stage? If not, what method is the practitioner to rely on? The only reliable method—viz, the subcutaneous inoculation of a *sound* tubercle antigen—is only exceptionally employed.

I quite agree with you when you say that

> No serious progress can be made without close coöperation between these three essential links in the chain of administrative control—the patient, his doctor, and the tuberculosis officer

But I cannot understand the line of thought in the succeeding sentence—

> In certain places where the coöperation has been complete the success of dispensary treatment has been such that undue emphasis has been laid on such minor adjuvants as the administration of certain remedies

If the treatment has been successful where these remedies are used, and unsuccessful or less successful where they have not been used what is one to conclude? Surely that the remedies are what has made all the difference In the last sentence you hope for complete success in the stamping out of the disease on return to normal conditions after the war the greater coöperation with the general practitioner and the more complete training of the tuberculosis officer Training in what methods? In the methods that have produced such a complete failure?

Let me turn now to your attitude towards those who having realised that the at present *practised* methods of prophylaxis are futile wish to try other methods You say —

> The contrast is so vivid between *apparent* administrative failure in regard to tuberculosis and the dramatic success achieved in stamping out enteric fever by means of prophylactic measures that increasing pressure is being brought to

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[1] Vide Circular on The Administrative Control of Pulmonary Phthisis March 1[illegible] 19[illegible]

[2] Vide Interim Report, 1912, and Final Report 1913

bear on authorities to treat tuberculosis as a contagious disease and the sufferer from tuberculosis as a social pariah to be isolated from his fellows

I would ask if theentericas have been stamped out by isolation of victims of the disease or by preventing their development by prophylactic inoculation ? And why is this prophylactic inoculation done in armies and in individuals who are going to countries where the disease is rife ? Surely because they are nearly certain to get infected, just as we all know, and you point out, the person who does not get infected with tuberculosis in these countries is the exception Why, then, object to trying methods in tuberculosis which have been so very successful in typhoid ? Surely there is a reasonable hope of success

I am, Sir, yours faithfully
W M CROFTON

Laboratory of Special Pathology University College
Dublin Oct 22nd 1917

⁂ Sir Arthur Newsholme's report shows that the war has given tuberculosis a good start while handicapping our measures for dealing with it This looks like failure, and many people, Dr Crofton among them, have taken it as such Sir Robert Philip blames us for giving publicity to this wide sense of discouragement because, as he says the foundations of an efficient anti tuberculosis scheme have been well and truly laid But it was precisely the object of our article to point this out in the face of the evidence to the contrary Our critics do not make any points against us that lead us to alter a single expressed view, though they differ from each other considerably —ED L

WAR DEAFNESSES

To the Editor of THE LANCET

SIR,—With regard to the article on hysterical deafness in soldiers in *THE LANCET of Oct 6th, your leading* article (Oct 13th), and the letter by Major A. F Hurst and Captain E A Peters (Oct 20th) may I be permitted the following remarks The *first case recorded* by the above named authors was so obviously hysterical that it requires no further notice The second case while not so obvious, certainly on the face of it suggests either hysteria or malingering, because complete deafness occurred under circumstances with which we are not accustomed *to associate this phenomenon* It would not, therefore, appear that either of the cases presented much difficulty The observation, however, that in both loud noises failed to waken the patients is interesting

When the authors say "we have found it necessary to discard almost all the criteria *formerly used* in the diagnosis of organic deafness from deafness due to hysteria or malingering" we are entitled to expect something very original, if not epoch making They must be aware that cases of true hysterical deafness are so rare that a careful record of 200 cases would be *expected to* give data which might well come under the latter classification Let us hope that they will not *long* delay the production of their records

With regard to their views as to the importance of vestibular reactions in diagnosis the following objections occur to me 1 Vestibular reactions are present, if perhaps somewhat delayed, in cases of "noise deafness" (sometimes called boilermakers' deafness) 2 In cases of concussion deafness due to artillery vestibular reactions are retained It is inconceivable that the authors desire to deny the occurrence of almost *complete* organic deafness from such causes This brings me to another point They state that in the deafness resulting from cerebro spinal meningitis if there be complete deafness part of it is hysterical The actual fact is that sufficient organic deafness is frequently left to make the sufferer, if a child a deaf mute The question, then of a little more or a little less must be of more academic than practical interest Finally, on what grounds do Major Hurst and Captain *Peters make* the following statement, "But it must be remembered that in partial organic deafness the vestibular reactions are lost in *the severer cases* and exaggerated in the slighter cases" ? My own view is that hysterical deafness may be suspected in cases in which the history indicates a chain *of circumstances* which the experienced observer is not inclined to consider sufficient to account for the great amount *of deafness* For the rest these cases conform to the *type* we are accustomed to meet with in lesions of the sound perceiving apparatus In general the diagnosis can *only* be made with certainty after recovery, which is sudden Unless further proof is forthcoming, I shall be disinclined to attach supreme importance to the presence of vestibular reactions as an aid to diagnosis of hysterical deafness

I am, Sir, yours faithfully
Edinburgh Oct 21st, 1917 P McBRIDE.

DIATHERMY

To the Editor of THE LANCET

SIR —I was much interested in reading in THE LANCET of Oct 20th Dr L W Bathurst's account of the successes he has recently obtained from the use of indirect diathermic fulguration, a method which I originally described in a paper I read before the Electro Therapeutic Section of the Royal Society of Medicine on Feb 18th, 1916 and which appeared in the Proceedings of that Society March, 1916, and also in the *Journal de Radiologie et d'Électrologie* July, 1916

Since I last explained the details of the method to Dr Bathurst I have considerably modified its technique I find that by far the best fulgurating instrument for general use is a Primus Pricker, an instrument sold at any ironmongers in 3*d* packets for cleaning the nipples of the well known Primus petroleum stoves In some cases, such as when treating the hands, or when treating children, or when operating under an anæsthetic, I bandage a 20 × 10 cm electrode on the thigh, *arm*, or abdomen of the patient instead of using the hand electrodes It is not essential to use the somewhat expensive and cumbersome autocondensation couch A very simple and efficient substitute can be cheaply made by taking a three-ply board the size of the consulting room couch or the size of the seat of a large chair placing on this board a piece of zinc about 6 inches smaller in length and breadth and fixing over this zinc a piece of vulcanite one-eighth of an inch thick and overlapping the zinc for 2 inches all round The board is drilled and a terminal attached to the zinc The insulating properties of the board are much increased by soaking it in melted paraffin wax. I have entirely abandoned the use of the ebonite rod, the use of which I *formerly recommended* to Dr Bathurst as I find that a small thin cushion or even a folded blanket, is quite sufficient insulation and far more convenient to use A rubber glove on the *left hand* forms, perhaps the best support, and is very useful in eye *cases for separating the lids*

Indirect diathermic fulguration has a much wider range of usefulness than the cosmetic purposes of which Dr Bathurst writes I have obtained very *satisfactory* and quick results in the fulguration of the nodules of lupus, in the treatment of *rodent* ulcer, chronic *pharyngitis*, *epulis* epithelioma of the cheek, and many other conditions where the destruction of small superficial structures or growths is *required* The accuracy of the application, and the ease and certainty with which its depth of action can be regulated, make it very useful in the treatment of *certain* conditions of the eye and eyelids I have recently been treating by this means, apparently with success, an old standing case of granular conjunctivitis, and also a growth, probably *malignant* of the cornea In the hands of a throat specialist this treatment would, I feel sure, be very *useful for* the destruction of laryngeal growths This method of *fulguration* is in almost daily use at the Radcliffe Infirmary Oxford where its *mode* of application can be seen any morning by appointment

I am, Sir, yours faithfully,
Oxford Oct 21st, 1917 W J TURRELL

THE TREATMENT OF ENURESIS

To the Editor of THE LANCET

SIR,—Enuresis is a *diagnosis* which includes so many causative conditions that I think it would be advisable if Mr A R Thompson, whose *letter on this* subject appeared in your issue of Oct 20th, would describe the class of case for which treatment by gradual dilatation of the bladder is suitable *I am somewhat* surprised that he and his acquaintances are not familiar with this method In my book on "The Diseases of *Children*" 1910 (*p* 566), I refer to it as appropriate for intractable cases after puberty, as in girls constant enuresis may lead *to* the bladder *becoming* unduly *small* Possibly it may be a justifiable measure at an earlier age, in spite of the objections appertaining *thereto* And it must be remembered *that many* and various methods prove curative, probably through the psychical effect. Mere change of surroundings, such as admission to a hospital ward, is sometimes sufficient to break the habit The method is also mentioned by Dr Leonard Guthrie in discussing functional diseases of the nervous system[1] as suitable for inveterate cases of irritable contracted bladder Admitting that the treatment may be advantageous in some cases, I think it should be clearly stated that it is not necessary or advisable for the majority and that it must not be employed indiscriminately It is only appropriate for certain cases which ought to be defined

I am, Sir yours faithfully,

Park-street, W., Oct. 22nd, 1917 EDMUND CAUTLEY

To the Editor of THE LANCET

SIR,—The treatment of enuresis by gradual dilatation of the bladder is not new I carried out the treatment in a very bad case in a girl 14 years of age, acting upon the advice of Mr (now Lieutenant Colonel) E Tenison Collins in 1903 Four ounces was all the girl could take at first, this was gradually increased to 12 ounces, and at the end of a fortnight treatment was stopped. There has been no relapse

I am, Sir, yours faithfully

Penarth Oct 20th, 1917 G P JAMES.

INSANE SAILORS AND SOLDIERS

To the Editor of THE LANCET

SIR,—Dr J F Gemmel in his letter in your issue of Oct 20th objects to 'Service patients" on two grounds. First because they are 'certified', and secondly that being in a public asylum they have the 'taint and stigma' of pauperism. My experience of the social class from which the majority of sailors and soldiers come is that they do not object to certification (a procedure they know little about) so much as to being sent to an asylum. The large military asylums which are suggested would suffer from the same 'stigma' as the county asylum Secondly there are many private patients in public asylums and they do not suffer from the stigma of pauperism. The 'Service patients are private patients

Dr Gemmel has however, put his finger on the weak point of his own plan. One of the greatest pleasures the insane have is to receive visits from their relatives and to deprive them of the possibility of such a privilege would be downright cruelty It is all very well to write of hardships as being unavoidable in war but surely the whole aim of Dr Gemmel's letter is to remove hardships and so far as I can see it merely replaces imaginary ones by a very real one To my mind the Ministry of Pensions and the Board of Control have grappled with a difficult problem in a most satisfactory manner

I am Sir, yours faithfully

City of London Mental Hospital, near
Dartford, Kent, Oct. 20th, 1917 R H. STEEN

THE CONTINUOUS ADMINISTRATION OF ASPIRIN

To the Editor of THE LANCET

SIR,—The following case will perhaps help your correspondent 'J O H."—

A H., a lady aged 30 recently consulted me on account of curious sensations in her head the chief of which was that when she entered a room she always saw a large box over which she had to step before being able to get to the other side The history was that she had suffered from headache for a long time for the relief of which she had taken aspirin freely She was in a very nervous state, very active and anxious to do her duty Thorough examination failed to disclose any actual disease but the ophthalmoscope revealed error of refraction I sent the patient to an ophthalmic surgeon who reported the presence of hypermetropic astigmatism and prescribed glasses. She was ordered to discontinue the use of the drug From that time the patient lost all her headache and other symptoms

I have no doubt that the reckless way in which aspirin is frequently prescribed would account for some obscure nervous conditions. Sisters and nurses in nursing homes are much given to doping patients with aspirin entirely on their own account, a practice which cannot be too strongly deprecated

I am Sir yours faithfully

Harley-street, W., Oct. 17th, 1917 CHARLES W CHAPMAN

The War.

THE CASUALTY LIST

THE following names of medical officers appear among the casualties announced since our last issue —

Killed

Capt R H Spittal, R.A.M C attached Lancashire Fusiliers qualified at Aberdeen University, where he held the appointment of junior demonstrator of anatomy in 1905 and was in practice at South Bank, Yorks, before joining the R A.M C

Lieut D S E Milligan R.A.M C, attached Worcester Regiment, was a student at St Thomas's Hospital London, where he held the appointment of casualty officer, and qualified in the early part of 1915

Lieut. R G Hill M C, R.A.M C, attached Coldstream Guards, received his medical education at St Bartholomew's Hospital, London, where he was at one time senior house physician, and qualified in 1911. He also held an appointment at the Great Northern Central Hospital, and was a surgeon at the British Red Crescent Hospital during the Turco-Italian War of 1912 At the outbreak of the great war he obtained a combatant commission in the Royal Field Artillery and served in France and in Egypt, and later was given a commission in the R.A M C The award of the M C was recorded in THE LANCET of Oct 6th, 1917, p 550

Capt E T Gaunt, R.A.M.C, qualified at Birmingham in 1908, and held appointments at the General Hospital and at the Queen's Hospital Birmingham

Capt G S Elliott Australian A.M C

Capt F C Davies R.A.M C, attached Northumberland Fusiliers, was educated at Cambridge and at Charing Cross Hospital, London, and qualified in 1908 He held appointments at Charing Cross, at West Ham Isolation and at Great Ormond street Hospitals, and was medical adviser to Cambridge Insurance Committee, and county tuberculosis officer at the time of joining the R.A.M C

Capt A. M Fisher, R.A.M C

Died of Wounds

Capt G A. MacFarland, R A M.C, was educated at Belfast, Dublin, and Edinburgh, and qualified at the latter place in 1903 He was at one time assistant medical officer at Hackney Union Infirmary, and later practised in Belfast

Lieut. Col A. W F Sayres R A.M.C, was a student at St Thomas's Hospital London and qualified in 1890 He had held appointments at St Thomas's and at the Bethlem Royal Hospital, London and also at the South Devon and East Cornwall Hospital, Plymouth He was attached to the R A.M C (T.F) prior to the outbreak of war and was in practice at Hartley, Plymouth, where he was tuberculosis officer to the Stonehouse District of the Devonshire County Council

Capt R Sherman, R.A.M C was a student at St Bartholomew's Hospital and qualified in 1912. He held a house appointment at St Bartholomew's, and joined the R.A.M.C in December 1914 Shortly afterwards he went to France and was present at the battles at Loos and on the Somme

Capt (temp Lieut -Col) H Gibson, R.A.M C received his medical education at the London Hospital, and qualified in 1907 and shortly afterwards joined the R.A.M.C

Died

Capt. P Sterling R.A.M C qualified at Durham in 1892, after taking holy orders in 1884 He was for many years a C M.S missionary in Palestine and was an honorary canon of St George's Collegiate Church Jerusalem.

Major H E Dalby, R.A.M C., was a student at Charing Cross Hospital and qualified in 1899 He was in practice at Torquay before going on active service and died at Basra Mesopotamia where he was in command of H M Hospital Ship, *Assaye*

Wounded

Capt. H L Flint R A M C attached East Lancs Regiment
Capt J H Morris-Jones R.A.M C, attached Worcester Regt
Major W E Crowther Australian A.M C
Capt A Nelson New Zealand A.M C
Capt. D A R Haddon R.A.M C, attached Royal Scots
Capt M P Finlayson Australian A.M.C
Capt E B Griffin M.C R A.M C attached Northumberland Fusiliers
Capt. J Tate R A.M C attached Royal Field Artillery
Capt. W E Graham, R.A.M C
Capt W L Halligan, R A.M C attached Royal Warwickshire Regiment.
Capt. P F Walker R.A M C., attached Coldstream Guards
Capt G T Baker R.A M C
Lieut Col P J Hanafin D S O R.A.M C

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[1] Diseases of Children, Edited by Dr A. E. Garrod, Dr F E Batten, and Dr J H Thursfield, 1913

Capt G Crawshaw, R A.M C , attached East Lancs Regt
Capt H Foxton, R A M C
Capt H A. Higginson, R A M C , attached Lancs Fusiliers
Capt F L Newton, R A M C , attached East Lancs Regt
Capt P R Woodhouse, M C , R A M C , attd Irish Guards

Previously reported Missing, now reported Prisoner in German Hands

Lieut Col G S Williamson, R A.M C

The Honours List

The following awards to medical officers are announced The acts of gallantry for which the awards were made are not yet announced All are members of the R A.M C unless otherwise stated The dates in parentheses, in those cases where bars have been awarded, refer to the number of The Lancet in which a record of the original decoration will be found —

Bar to the Military Cross

Temp Capt. O J Day M C (June 23rd 1917 p 969) Temp Capt A Fullerton M C (Jan 6th 1917 p 38), Temp Capt. N J H Gavin M C (June 9th 1917 p 894) Temp Capt A. J R O'Brien M C African Med Serv (Feb 17th 1917 p 279) Temp Capt D J S Stephen M C (July 31st 1915 p 257)

Military Cross

Capt. J Alston (Spec Res) Capt R B G Atkins (Spec. Res) Temp Capt P B Belanger, Capt. T H Bell Canadian A.M C Capt. W S Birch (Spec Res) Temp Capt. A. G Bisset Capt A Bloom Temp Capt. O V Burrows Temp Capt. C K Carroll Capt. J P S Cathcart, Canadian A M C Temp Capt. J -P Charles Temp Capt. A T Cunningham; Temp Capt. L M Dawson Temp Capt. H J de Brent Temp Capt. C K. G Dick Temp Capt J Dickson Capt F F Dunham Canadian A M C Lieut L du Vergé Temp Capt H H Elliot Temp Capt. H V Forster Temp Capt C W Fowler, Temp Capt. J H C Gatchell Temp Lieut J A C Greene; Capt D A R Haddon Capt J L. Hamilton Temp Capt. D C Hanson Temp Cap A R Jackson Capt C L. Lander Capt H D Lane- Capt P MacCallum (Spec Res.) Temp Capt. D J Macdougall Capt. A E P McConnell Capt. E A. McCusker Canadian A.M C Temp Capt. D C M Page Capt A. A Parker Canadian A M C Capt W B Postlewaite (Spec Res) Capt J W G H Riddel Capt S G Ross Canadian A.M C Temp Capt. W Russell Capt J B Scott (Spec. Res) Capt W H Scott, Canadian A M C Temp Capt E S Sowerby Temp Capt. W Turner Lieut. S Vidot (Spec Res) Temp Capt. J A. Vlasto; Capt. J W Woodley Canadian A.M C

OBITUARY OF THE WAR

ALFRED CECIL EDWARDS M B , Ch B Liverp ,

MILITARY CROSS,

CAPTAIN, ROYAL ARMY MEDICAL CORPS

Captain A. C Edwards, who died from the effects of shell gas in hospital in France on July 25th, at the age of 37 years, was second son of the late Canon Edwards, of Bingley He was educated at the Bradford Grammar School and at Queen Elizabeths School, Kirkby Lonsdale, taking his medical course at Liverpool University and graduating in 1903 After filling resident posts at the Northern Hospital and the South Dispensary in Liverpool, he entered the Colonial Medical Service Receiving a commission in the R A.M C early in 1915, he went to France in May of the same year as regimental medical officer, and remained at the front until his death He was wounded and gassed in December 1915 being awarded the Military Cross His colonel writes of Captain Edwards as a most efficient regimental medical officer

CHARLES WELLER, M R C S Eng , L D S

CAPTAIN ROYAL ARMY MEDICAL CORPS

Captain C Weller, who was killed on active service on August 16th, at the age of about 35 years was second son of Charles Weller of Redhill He was educated in France and took his dental course at Guy's Hospital qualifying L D S in 1905 and M R C S five years later He then entered into partnership in a dental practice in London, which he gave up to join the Expeditionary Force in October 1914, serving at the clearing hospital at Bethune, and later at Choate He was then attached to a field ambulance in connexion with the 1st Cavalry Division and on expiration of his second year, having signed on for the remainder of the war he was at a base hospital until recently relieved by an American unit At the time of his death he was medical officer to a London regiment News was received at the regimental aid post saying that some officers were buried inside a building which had been shelled. On his way to render assistance he received a severe wound in the temple, which he only survived for a few minutes

Captain Weller was an excellent French scholar, and was also well known in the hunting field

Casualties among the Sons of Medical Men

The following additional casualties among the sons of medical men are reported —

Private H S Edwards, Middlesex Regiment, killed in action, eldest son of Dr A S Edwards, of Halling, Kent
Capt R S Adams, Royal Field Artillery, killed in action, only son of Dr R G W Adams, of Wellington, New Zealand
Major H E Dalby R A.M C , died, son of the late Dr W B Dalby, of Torquay
Second Lieut J M De Lacey, West Yorkshire Regiment attached Royal Flying Corps, killed in action, only son of Dr R C De Lacey, of Newcastle on Tyne
Second Lieut R C D Moore, H A C killed in action, elder son of Capt R D Moore, R A M C , of Churchdown, Gloucester
Capt I Heaton, Royal West Kent Regiment died of wounds, son of Capt C J Heaton R A.M C , of Westgate-on Sea
Second Lieut T S Arnold, East Surrey Regiment, attached Lancashire Fusiliers, died of wounds, elder son of Dr F S Arnold, of Berkhamsted Herts
Col H G F Longhurst, Royal Berkshire Regiment, killed in action, youngest son of Dr A. E T Longhurst of Chandlersford, Hampshire
Second Lieut J E Beckingsale, Duke of Cornwall's Light Infantry killed in action only son of Dr D L Beckingsale, of Towyn Merioneth, Wales
Capt (temp Lieut Col) H Gibson, R A M C died of wounds, younger son of Surg Lieut Col G J Gibson A M S (ret), of Totnes, Devon

URBAN VITAL STATISTICS

(Week ended Oct 20th, 1917)

English and Welsh Towns —In the 96 English and Welsh towns with an aggregate civil population estimated at nearly 17 000 000 persons the annual rate of mortality was 12·0 against 11 1 and 11 8 per 1000 in the two preceding weeks In London, with a population exceeding 4 000 000 persons the death rate was 12·9 or 0·9 per 1000 above that recorded in the previous week among the remaining towns the rates ranged from 6 0 in East Ham 6 3 in Acton and in Carlisle and 6 8 in Bury to 18 4 in Fxeter 19 9 in Lincoln and 20·8 in Stockton on Tees The principal epidemic diseases caused 293 deaths which corresponded to an annual rate of 0·9 per 1000 and included 178 from infantile diarrhœa, 54 from diphtheria 33 from measles 25 from whooping cough 8 from scarlet fever and 2 from enteric fever The deaths from diarrhœa which had been 257 272 and 243 in the three preceding weeks, fell to 178 and included 50 in London 12 in Liverpool 11 each in Sheffield and Hull 10 in Manchester and 7 in Birmingham The 1021 cases of scarlet fever and 1314 of diphtheria under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital were respectively 97 and 43 above the numbers remaining at the end of the previous week Of the deaths from all causes in the 96 towns 118 resulted from violence The causes of 31 deaths were uncertified of which 5 were registered in Birmingham 4 in South Shields and 3 in Darlington

Scotch Towns—In the 16 largest Scotch towns, with an aggregate population estimated at nearly 2,500 000 persons the annual rate of mortality was 12 1, against 10 7 and 11 8 per 1000 in the two preceding weeks. The 244 deaths in Glasgow corresponded to an annual rate of 11 4 per 1000 and included 10 from whooping cough 9 from infantile diarrhœa, 4 from diphtheria, and 2 from measles The 104 deaths in Edinburgh were equal to a rate of 16 3 per 1000 and included 5 from infantile diarrhœa, 2 from whooping-cough and 1 from diphtheria.

Irish Towns—The 137 deaths in Dublin corresponded to an annual rate of 17·9 or 2·1 per 1000 above that recorded in the previous week and included 7 from infantile diarrhœa 2 from measles and 1 each from enteric fever and whooping-cough The 99 deaths in Belfast were equal to a rate of 13 1 per 1000 and included 3 from infantile diarrhœa, 2 from measles, and 1 from whooping-cough

VITAL STATISTICS OF LONDON DURING SEPTEMBER 1917

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases it appears that the number of persons reported to be suffering from one or other of the ten diseases specified in the table was equal to an annual rate of 4·2 per 1000 of the population, estimated at 4,237 387 persons: in the three preceding months the rates had been 3 4 3 5 and 3 1 per 1000 respectively The lowest rates last month were recorded in Kensington Hampstead the City of London Camberwell Greenwich and Woolwich and the highest rates in Chelsea, Stoke Newington Shoreditch Bethnal Green Southwark and Bermondsey The prevalence of scarlet fever showed a marked increase over that recorded in the preceding month this disease was proportionally most prevalent in Chelsea, Finsbury Shoreditch Bethnal Green Poplar Bermondsey Battersea and Lewisham. The Metropolitan Asylums Hospitals contained 807 scarlet fever patients at the end of last month against 595 644 and 615 at the end of the three preceding months the weekly admissions averaged 138, against 101 and 83 in the two preceding months Diphtheria also was considerably more prevalent than it had been in the preceding month the greatest proportional prevalence of this disease was recorded last month in Paddington St Marylebone, Stoke Newington Shoreditch, Bethnal Green Southwark Bermondsey and Deptford The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals which had been 1042, 1070 and 1003 at the end of the three preceding months had risen to 1111 at the end of last month the weekly admissions averaged 168, against 142 and 122 in the two preceding months. The prevalence of enteric fever was appreciably greater in September than in August the 44 cases notified last month included 7 in Poplar 7 in Wandsworth 4 in Lambeth and 3 in Kensington There were 46 cases under treatment in the Metropolitan Asylums Hospitals at the end of the month against 41 and 45 at the end of the two preceding months the weekly admissions averaged 6 in each of the last two months Erysipelas was proportionally most prevalent in Paddington Holborn Shoreditch, Bethnal Green and Deptford The 14 cases of puerperal fever notified during the month included 3 in Fulham 2 in St Pancras and 2 in Stepney Of the 12 cases of cerebro spinal meningitis 3 belonged to Wandsworth 2 to Hackney and 2 to Camberwell while of the 7 cases of poliomyelitis 2 belonged to Fulham

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending Sept. 29th the deaths of 3582 London residents were registered, equal to an annual rate of 11 0 per 1000 in the three preceding months the rates were 12 0 10·9 and 10·5 per 1000 The rates last month ranged from 6 6 in Woolwich 7 8 in the City of London 9 1 in Hampstead 9 4 in St Marylebone 9 6 in the City of Westminster 9 7 in Camberwell and 9·9 in Paddington to 12·9 in Stepney 13·2 in Chelsea and in Southwark, 13 5 in Finsbury 14 2 in Shoreditch and 14·9 in Bermondsey The 3582 deaths from all causes included 399 which were referred to the principal infectious diseases of these 23 resulted from measles, 4 from scarlet fever 23 from diphtheria, 38 from whooping cough 9 from enteric fever and 302 from diarrhœa and enteritis among children under 2 years of age No death from any of these diseases was recorded last month in the City of London among the metropolitan boroughs they caused the lowest death rates in Kensington the City of Westminster Hampstead Holborn and Woolwich and the highest rates in Fulham Chelsea, Shoreditch Bermondsey Deptford, and Greenwich The 23 deaths from measles were only half the corrected average of these 23 deaths 7 belonged to Shoreditch, 3 to Stepney and 2 each to Paddington Chelsea, and Poplar The 4 fatal cases of scarlet fever were 9 below the corrected average number and included 2 in Finsbury and 1 each in Bethnal Green and Camberwell The 23 deaths from diphtheria were 18 fewer than the corrected average number and included 4 in Southwark and 2 each in Paddington St. Marylebone, Bethnal Green, and Wandsworth The 38 fatal cases of whooping-cough were 4 below the corrected average and included 4 in Bermondsey 4 in Lambeth and 3 each in Hammersmith Islington, and Southwark. The 9 deaths from enteric fever were 1 in excess of the corrected average and included 2 in Hammersmith 2 in Poplar and 2 in Wandsworth. The 302 fatal cases of diarrhœa and enteritis among children under 2 years of age were 342 less than the corrected average number the greatest proportional mortality from this disease last month was recorded in Fulham Chelsea, Shoreditch, Bermondsey Deptford and Greenwich In conclusion it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 49·7 per cent. below the average

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING SEPTEMBER 1917

(*Specially compiled for* THE LANCET)

Cities and Boroughs.	Estimated civil population 1916	Notified Cases of Infectious Disease												Deaths from Principal Infectious Diseases.									Deaths from all causes	Death rate per 1000 living
		Small pox	Scarlet fever	Diphtheria *	Typhus fever	Enteric fever	Other continued fevers	Puerperal fever	Erysipelas	Cerebro-spinal meningitis	Poliomyelitis	Total	Annual rate per 1000 persons living	Small pox.	Measles	Scarlet fever	Diphtheria.*	Whooping cough	Enteric fever	Diarrhœa and enteritis (under 2 years)	Total	Annual rate per 1000 persons living		
LONDON	4,237,387	—	524	627	—	44	—	14	142	12	7	1370	4·2	—	23	4	23	38	9	302	399	1·2	3582	11·0
West Districts																								
Paddington	130,663	—	6	27	—	—	—	1	7	1	—	42	4·2	—	2	—	2	—	—	7	11	1·1	99	9·9
Kensington	152,144	—	10	6	—	3	—	—	6	1	—	26	2·2	—	—	—	—	1	1	1	3	0·3	118	10·1
Hammersmith	117,965	—	10	15	—	1	—	—	3	—	1	30	3·3	—	1	—	—	3	2	6	12	1·3	92	10·2
Fulham	149,423	—	17	18	—	2	—	3	5	—	2	47	4·1	—	—	—	—	2	—	20	22	1·9	125	10·9
Chelsea	57,298	—	17	8	—	1	—	1	2	—	—	29	6·6	—	2	—	1	—	—	7	10	2·3	58	13·2
City of Westminster	132,853	—	15	14	—	1	—	—	4	—	—	34	3·3	—	—	—	1	—	1	2	4	0·4	98	9·6
North Districts																								
St Marylebone	93,573	—	6	19	—	1	—	—	2	—	—	28	3·7	—	—	—	2	—	—	5	7	0·9	71	[illegible]
Hampstead	81,470	—	4	5	—	2	—	—	1	—	—	12	1·9	—	—	—	—	—	—	1	1	0·2	57	9·1
St. Pancras	196,812	—	25	35	—	2	—	2	8	1	—	73	4·8	—	1	—	1	1	—	8	11	0·7	183	11·1
Islington	309,359	—	38	36	—	2	—	1	11	—	—	88	3·7	—	—	—	1	3	—	20	24	1·0	280	11·0
Stoke Newington	49,776	—	6	17	—	—	—	—	—	—	—	23	6·0	—	—	—	—	—	—	6	5	1·3	40	[illegible]
Hackney	209,636	—	29	16	—	—	—	—	10	2	—	57	3·5	—	—	—	—	2	—	12	14	0·9	192	11·9
Central Districts																								
Holborn	38,161	—	1	5	—	1	—	—	3	—	—	10	3·4	—	—	—	—	—	—	1	1	0·3	34	11·5
Finsbury	74,230	—	12	9	—	—	—	1	1	—	—	23	4·0	—	1	2	—	—	—	5	8	1·4	[illegible]	[illegible]
City of London	20,113	—	—	2	—	—	—	—	—	—	—	2	1·3	—	—	—	—	—	—	—	—	—	12	[illegible]
East Districts																								
Shoreditch	99,832	—	21	23	—	—	—	1	5	—	—	50	6·5	—	7	—	1	2	—	19	29	3·8	[illegible]	14·2
Bethnal Green	115,562	—	31	40	—	—	—	—	9	—	—	80	9·0	—	—	1	2	1	—	9	13	1·5	[illegible]	[illegible]
Stepney	253,335	—	34	41	—	2	—	2	11	—	—	90	4·5	—	3	—	1	2	—	21	27	1·4	[illegible]	[illegible]
Poplar	155,095	—	32	19	—	7	—	1	5	—	1	65	5·5	—	2	—	1	2	2	11	18	1·5	[illegible]	[illegible]
South Districts																								
Southwark	177,166	—	19	74	—	—	—	—	7	—	—	100	7·4	—	—	—	4	3	—	12	19	1·4	[illegible]	13·2
Bermondsey	113,661	—	27	38	—	—	—	—	3	—	—	68	7·8	—	—	—	1	4	—	25	30	3·4	[illegible]	[illegible]
Lambeth	233,729	—	24	31	—	4	—	—	8	1	1	69	3·2	—	1	—	1	4	1	16	23	1·1	[illegible]	[illegible]
Battersea	159,402	—	27	17	—	—	—	—	3	1	—	48	3·9	—	1	—	1	—	—	10	12	1·0	[illegible]	[illegible]
Wandsworth	310,658	—	45	34	—	7	—	—	2	3	1	92	3·9	—	—	—	2	2	2	21	27	1·1	[illegible]	11·3
Camberwell	2[illegible]9,749	—	16	22	—	1	—	—	7	2	1	49	2·6	—	—	1	—	2	—	19	22	1·1	[illegible]	[illegible]
Deptford	107,696	—	5	20	—	1	—	—	8	—	—	34	4·1	—	1	—	1	2	—	13	17	[illegible]	[illegible]	[illegible]
Greenwich	94,452	—	9	9	—	1	—	—	2	—	—	21	2·9	—	1	—	—	—	—	11	12	[illegible]	[illegible]	[illegible]
Lewisham	162,901	—	30	13	—	1	—	1	5	—	—	50	4·0	—	—	—	—	1	—	12	13	[illegible]	[illegible]	[illegible]
Woolwich	130,313	—	8	14	—	2	—	—	4	—	—	28	2·8	—	—	—	—	1	—	3	4	[illegible]	[illegible]	[illegible]
Port of London	—	—	—	—	—	2	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup

Medical News.

Society of Apothecaries of London—At examinations held recently the following candidates were successful in the subjects indicated —

Surgery —E F Deacon (Section II), Guy's Hospital E A Leak (Section I), Cambridge and London Hospital and I Liberman (Sections I and II) Leeds

Medicine —J L D Buxton (Sections I and II) University College Hospital; E F Deacon (Section II) and A. Magill (Section I), Guy s Hospital J S Matthews London and University College Hospitals G L. Mitchell (Sections I and II) Glasgow and Birmingham and J H Tighe (Sections I and II) Birmingham.

Forensic Medicine —J L. D Buxton University College Hospital O Halstead Guy's Hospital J S Matthews London and University College Hospitals and J H Tighe Birmingham

Midwifery —G H Fitzgerald and O Halstead Guy's Hospital S G Mohamed, Liverpool, S Robinson Belfast and St. Thomas's Hospital G E Spero, London Hospital; and T C Stephen Manchester

The diploma of the Society was granted to the following candidates entitling them to practise medicine surgery, and midwifery: J L. D Buxton E F Deacon I Liberman, and J S Matthews

Royal College of Surgeons of Edinburgh—At the annual meeting of the College on Oct 18th the following office bearers were elected for the ensuing year —President Robert McKenzie Johnston Vice President James W B Hodsdon Secretary and treasurer George Mackay Convener of museum committee Charles Walker Cathcart Librarian Harold Jalland Stiles President's Council Francis Mitchell Caird, Sir George Andreas Berry, David Wallace, Henry Alexis Thomson, Harold Jalland Stiles, and Alexander Miles, *ex-officio* The vice president, the secretary and treasurer, and the Representative in the General Medical Council Representative in the General Medical Council James W B Hodsdon

At a meeting of the College on Oct 18th the following, having passed the requisite examinations between July 2nd and 4th, were admitted Fellows —Henry Howard Christie, Wanganui, New Zealand, James Bertram Leather, Birmingham Richard Parsons, Sandgate, Marion Columbus Pruitt, London, Henry Anthony Rippiner, Bradford, and David Welsh, Amble, Northumberland

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

C H A Shepherd to be temporary Surgeon

ARMY MEDICAL SERVICE

Col F W C Jones, C B , is placed on retired pay

TERRITORIAL FORCE.

Major (temp Lieut -Col) C H Lindsay C M G to be Assistant Director of Medical Services and is granted the temporary rank of Colonel whilst so employed

Lieut Col. H H C Dent to be Assistant Director of Medical Services and is granted the temporary rank of Colonel whilst so employed

Capt (temp Major) H J Dunbar to be Deputy Assistant Director of Medical Services Welsh Division

ROYAL ARMY MEDICAL CORPS

Lieut Col (temp Col.) P MacKessack, D S O relinquishes the rank of temporary Colonel on reposting

Major (temp Lieut -Col) C W Holden D.S O to be an Assistant Director of Medical Services of a Division and to retain his temporary rank

Major (acting Lieut Col) W L Steele retains his acting rank whilst in command of a General Hospital

To be acting Lieutenant-Colonels Major C H Carr and Temp Major E W Skinner whilst in command of a General Hospital Major F J Garland whilst in command of a Casualty Clearing Station Capt W W Boyce and Lieut. (temp Capt) R A Preston M C whilst in command of a Field Ambulance

Major W L. Bennett is placed on the half pay List on account of ill health.

Major R E Humfrey to be acting Lieutenant Colonel whilst in command of a Field Ambulance

J C MacNeillie and S Slack are granted temporary rank for duty with the South African Native Labour Corps as Major and Captain respectively

Temp Capt. B L. Neilley Canadian Army Dental Corps, to be temporary Major

L. F B Knuthsen to be temporary Honorary Major whilst serving with No 5 British Red Cross Hospital

E J Tyrrell late temporary Captain to be Honorary Captain

Temporary Lieutenants to be temporary Captains: A. McP Warner H R Mayo W C Counell H N Eccles L. W Evans K. D Attridge V D C Wakeford, N W Rawlings J E. Sharp, J B Martin A. A. Henderson H L. Cronk H M L. Crawford H S Brown R Adam W Gemmill T E R Branch W Farquharson R H Thomas B C Kinney J Robertson R J Harley Mason H B Weir J Robertson C E O Keeffe F Brickwell J C Livett H L. Smith G D Laing F M. Bishop C Elliott, A. J Turner

[illegible] P F Godwin late temporary Captain is granted the honorary [illegible] ntain

H Nockolds to be temporary Honorary Captain whilst in charge of Queen Alexandra s Hospital

To be temporary Captains: T M Creighton T M Savage, S J Staples

A. T Paterson to be temporary Honorary Lieutenant whilst employed with the St John Ambulance Brigade Hospital

T S Evans to be temporary Honorary Lieutenant whilst serving with the British Red Cross Hospital Netley

P E el Howie, late temporary Lieutenant is granted the honorary rank of Lieutenant.

S H Kagan to be temporary Honorary Lieutenant

Officers relinquishing their commissions Temp Lieut Col (Can A.M C) T McCrae Temp Capts E N Coutts (on account of ill health contracted on active service) R H Oliver R Sterling (on account of ill health) H Hebblethwaite L. S Kidd, J S Findlay J K. Morton H J Bell T B Riddall S Bryson G H Powell, E Gordon E Seelly J F Bullar E S A Heathcote G D H Wallace C H W Page J C Bawden R N Farrer J E Rees J McTurk, J Kirker G W Lloyd E C MacKay P Gettleson J Joule R P Nash, W T Wearing A C Falkiner V M Fisher W Millerick B W Gonin A. Lindsay, L. W Crowe S H Hay R Marshall F L. Brown, A. MacIntyre T D Moffatt S A. Bull D T H Croly A. F Cole A. B MacLean S G Dixon (on account of ill health contracted on active service and granted honorary rank of Captain) E W Braithwaite (on account of ill health) K B J Vickers (on account of ill health) Temp. Lieuts J F Windsor, W Shaw, G L Ranking C W Coghlan J R McFerran L Cohen, R D R. Allison G H Hanna, W S. Sheldon G A. Ticehurst, J A. C Doonan G L. Crimp F H Wolfe J Longworth H Austin-Smith J R. Davies J W Turner, J Brownlee P A. Steven C F P Plunkett H W B Monteagle W Butterley (on account of ill health) V C H Dearden J A. Durante (on account of ill health) W Beckton F W Waterworth J G Fraser E A W English E G D Menzies E H Drake, A. B Rendel, W A. Loxton A Reid G H. Rodolph J R Thompson A. J Kearney, H T Evans W S Darby

SPECIAL RESERVE OF OFFICERS

J Michaelson, from Glasgow University Contingent O T C to be Lieutenant.

TERRITORIAL FORCE.

Lieut Col (temp Col) H H C Dent relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services and is restored to the Establishment

Major J E O Connor relinquishes his commission on account of ill health contracted on active service and is granted the honorary rank of Major

Major R W Forrest relinquishes his commission on account of ill health and is granted permission to retain his rank and wear the prescribed uniform

Major (temp Lieut Col) C H Lindsay, C M G is seconded whilst holding an appointment as Assistant Director of Medical Services

Major E L Anderson from Army Medical Service to be Major

Capt. (temp Major) H J Dunbar is restored to the Establishment

Capt G G Plant from Durham Light Infantry to be Captain and is granted the honorary rank of Lieutenant-Colonel

Capt A. H Worrall from Lincolnshire Regiment, to be Captain

Capt. (temp Major) (Brevet Major) D W Boswell relinquishes his temporary rank on alteration in posting

Capt. D E Evans relinquishes his commission on account of ill health and is granted the honorary rank of Lieutenant-Colonel

Capt H J Robson relinquishes his commission on account of ill health contracted on active service and is granted the honorary rank of Captain

Capt (temp Lieut. Col) N C Rutherford D S O from Field Ambulance to be Captain

Lieut W E Porter from Lincolnshire Regiment to be Lieutenant.

C S Crichton (late Captain, R A M C) to be temporary Major Surrey Medical Volunteer Corps

T H Goodman to be temporary Lieutenant and Medical Officer 5th Battalion Suffolk Volunteer Regiment.

J Hartigan to be temporary Lieutenant and Medical Officer 1st Battalion Glamorganshire Volunteer Regiment

J M Martin to be temporary Lieutenant and Medical Officer 4th Battalion Gloucestershire Volunteer Regiment.

H Farncombe (late Lieutenant R A M C) to be temporary Lieutenant and Medical Officer, 3rd Battalion Hampshire Volunteer Regiment

F McKenna to be temporary Lieutenant and Medical Officer 1/1st Battalion Ayrshire Volunteer Regiment.

W O Piper to be temporary Lieutenant and Medical Officer 3/11th Battalion Lancashire Volunteer Regiment.

D Fenton to be temporary Captain and Medical Officer 10th Battalion Lancashire Volunteer Regiment

J E Healey (late Lieutenant R A M C) to be temporary Lieutenant and Medical Officer 12th Battalion Lancashire Volunteer Regiment

J A. H Barnes (late Captain I.M S) to be temporary Captain and Medical Officer 1st Battalion Leicestershire Volunteer Regiment

H Johnson to be temporary Lieutenant and Medical Officer 2/9th Battalion County of London Volunteer Regiment

W Robertson (late Captain R.A.M C (T)) to be temporary Captain and Medical Officer 2/1st Battalion Midlothian Volunteer Regiment

H Tipping (late Lieutenant, R.A.M C) to be temporary Captain and Medical Officer 1st Battalion Middlesex Volunteer Regiment

E H Alton (late Lieutenant, R.A M C) to be temporary Captain and Medical Officer 3rd Battalion Worcestershire Volunteer Regiment

A. Wilson (late Major 2nd E R. of Yorks R.G A Volunteers) to be temporary Captain and Medical Officer, 1st Battalion East Riding Volunteer Regiment.

P Macdonald (late Lieutenant, R.A.M.C) to be temporary Captain and Medical Officer 22nd Battalion West Riding Volunteer Regiment

DEATHS IN THE SERVICES

The death in India of Sir Charles Pardey Lukis, K C S I Director General of Indian Medical Services aged 60 is announced He entered the Indian Medical Service in 1880 and served with the Mashood Wuzeeree Expedition in 1881 and with the Lohob Valley Expedition three years later He became Civil Surgeon of Simla in 1899 and in 1905 was appointed principal and professor of medicine in Calcutta Medical College and senior physician at the College Hospital In 1910 he was appointed Director General

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS

The Parliamentary Session

PARLIAMENT resumed on Tuesday Oct 16th, after the ntumn recess

A Midwives Bill for Ireland

Mr DUFF the Chief Secretary for Ireland proposes to itroduce a Midwives Bill for Ireland at an early date

War Pensions Committees

A Bill has been presented in the House of Commons by lr HODGE, the Minister of Pensions, for the purpose of roviding for the inclusion on local committees constituted nder the Naval and Military War Pensions Act of repre ntatives of disabled men discharged from the Naval and ilitary Services of His Majesty It has been read a first me

HOUSE OF COMMONS

TUESDAY, OCT 16TH

A Circular Memorandum

Mr PRINGLE asked the Under Secretary for War whether confidential letter was issued by the Director General of iedical Service in June to deputy directors of medical rvice with reference to expediting the discharge of ounded men from hospitals, and, if so, whether he would iblish the letter —Mr MACPHERSON replied My honourable iend is referring, I think, to a circular memorandum issued r the Deputy Director of Medical Services, Scottish Com and, on June 26th last I have ascertained that this rcular was not based upon any special instructions from e War Office but upon general principles As I said in bate on August 17th, I do not think that the interpretation aced upon it by my honourable friend is borne out by the mplete text, a copy of which I will place in the library

Instructions to Medical Boards

Mr BONAR LAW (Chancellor of the Exchequer) informed r PRINGLE that the instructions to medical boards under e new authority had been drawn up and were now being inted They would shortly be laid upon the table of the ouse

Amendment of Insurance Act

Answering Mr HOGGE, who asked when it was proposed introduce a new Insurance Bill Sir E CORNWALL (repre nting the National Insurance Commissioners) said I hope be in a position to give the desired information shortly

Women Workers in V A D Hospitals

Mr BENNETT GOLDNEY asked the Chancellor of the chequer whether he would take an early opportunity of aking it known whether women workers and nurses luntarily or for partial remuneration had undertaken all e arduous and various duties in connexion with Voluntary d Detachment hospitals for our wounded soldiers, whether was aware that many thousands of these women had en carrying on their work for the whole period of the war, atly unnoticed and often forgotten whether he would nember that a number of them had continued to carry their duties at serious sacrifices of both health and ney, and whether in the circumstances he would make h humble representations to His Majesty as would ourably place before him the claims of these women who d already earned the national gratitude to some honour e but inexpensive recognition such as a distinctive ribbon, hat all those who merited it should be able to receive such honour now instead of their being made to wait until ne unknown period after the war when many of them ght have been forced by illness death, or other circum nces to cease their work.—Mr BONAR LAW answered e Government is fully aware of the facts to which my ourable and gallant friend refers in the first three parts of estion. As regards the last part he may rest assured that ry endeavour is being made in conjunction with the irman of the Joint War Committee of the British Red Society and the Order of St John of Jerusalem and the Central Joint Voluntary Aid Detachment Committee ord such recognition as is possible of the services of e ladies and when final details respecting the award of Order of the British Empire have been settled further iculars for the award will be available I am informed neither the War Office nor the other departments con d regard with favour the suggestion that a distinctive on should be instituted

WEDNESDAY, OCT 17TH

Recruiting Medical Boards

r HOGGE asked the Parliamentary Secretary to the istry of National Service whether he could now state h of the recommendations of the Select Committee on al boards the Government had adopted, and whether it was proposed to provide any means whereby men improperly passed into the Army could appeal their cases —Mr BECK replied The organisation of recruiting medical boards is being transferred from the War Office to the Ministry of National Service After a date early in November all men waiting to be called up for military service or holding a certificate of temporary or conditional exemption may claim to be graded by one of the National Service Medical Boards Such re examination will not interfere with a subsequent appeal to an appeal tribunal The machinery for making appeals to appeal tribunals for re-examination will also be ready early in November Medical assessors acting with the appeal tribunals will re-examine all men whose applications for re examination are granted by the appeal tribunals The finding of the appeal tribunal assessors will be final as regards a man's physical condition The appeal tribunals and their assessors are to be administered by the Local Government Board Attested men will have the same rights of appeal as unattested men

THURSDAY, OCT 18TH

A Ministry of Health

Answering Mr DILLON, Mr BONAR LAW (Chancellor of the Exchequer) said The proposal of a Ministry of Health is under careful consideration At present the various difficulties needing to be provided for in the establishment of such a Ministry have not reached any widely agreed solution, and as long as this is so it is not possible to undertake to introduce a Bill for the purpose Steps, however, are being taken which will it is hoped, secure substantial agreement amongst those who are actively engaged in the work of national health

Mr DILLON If substantial agreement cannot be arrived at before the end of the session, will the right honourable gentleman give the House the opportunity of discussing this most important subject ?—Mr BONAR LAW Perhaps the honourable Member will put down a question towards the end of the session and I shall be glad to answer it

Soldiers Suffering from Lung Trouble

Major HUNT asked the Chancellor of the Exchequer whether, in view of the fact that British and Irish troops suffering from lung trouble were not at present allowed to settle in the Dominions, and that there were considerable numbers of these troops suffering from lung trouble caused by service during the war and from gas attacks, and in view of the fact that the Ministry of Pensions had stated their inability to do anything to enable these men to go to and reside in a dry climate as declared to be necessary by medical officers to prevent the development of tuberculosis he could say whether the Government would apply to the Dominion governments for areas of land in their countries to be set apart for the purpose of settling these men in a dry climate and so saving their lives for the Empire —Mr BONAR LAW answered The points suggested in my honourable friend's question are being considered

Surgeon General Sir W Babtie

Mr KING asked the Under Secretary for War whether he could state the present position of those officers censured in the report of the Mesopotamia Commission and what action the Army Council proposed to take —Mr MACPHERSON wrote in reply I am afraid that I cannot add much to the answer which I gave to my honourable friend s question on this subject in August last Surgeon-General Sir W Babtie has submitted his explanation, the Army Council has found it satisfactory and Surgeon General Babtie has been recalled from leave and has resumed his official duties The Council still awaits the explanations of the other officers concerned

Medical Officers of the Territorial Force

Colonel GRETTON asked the Under Secretary for War whether he was aware that a number of medical men joined the Territorial Forces as medical officers *à la suite* with the rank of captain and that an undertaking was given that such officers should be promoted to the rank of major after eight and a half years' service whether he was aware that this term expired in the case of a number of medical officers *a la suite* in June last and that no promotions had taken place and whether it was intended to carry out the under taking which was given at the time these officers joined the service —Mr MACPHERSON (in a written answer) replied The answer to the first part of the question is in the negative Officers appointed to the *a la suite* staffs of general hospitals serve under different conditions to other officers of the Royal Army Medical Corps and promotion is not based on any qualifying time period

Medical Service of the Expeditionary Force

Colonel GRETTON asked the Under Secretary for War whether the Commission recently sent to examine into the medical service of the Expeditionary Force had yet reported if not when the report might be expected and whether it would be laid upon the table of the House —Mr MACPHERSON wrote in reply No report has been received nor can I say when one will be in possession of the Army Council I am afraid that no promise to make the report public can be given in advance

Dental Treatment of Soldiers

In the course of replies to Mr PENNEFATHER, Mr MACPHERSON stated that the total number of commissioned dental officers in the Army was 517

Physical Standards of Recruits

Sir WILLIAM COLLINS asked the Parliamentary Secretary to the Ministry of National Service whether he would lay upon the table of the House the Memorandum which had been prepared containing directions as to the standards of physical fitness of recruits and the classification which was to supersede the present A, B, and C categories with their subdivisions.—Mr BECK replied The Memorandum asked for by my honourable friend is at present under the consideration of the Advisory Medical Board of the Ministry and will be presented to the House at an early date

Exchange of Prisoners of War

In the course of replies to Mr HUME WILLIAMS on the question of the exchange of prisoners of war, Mr J F HOPE (representing the War Prisoners' Department) stated that no prisoners had yet been interned in Holland under the Hague agreement, but 800 prisoners had already been repatriated from Switzerland as a result of it Swiss medical commissioners were now visiting Germany to select British prisoners of war for transfer to Switzerland They had not yet, it was believed, completed their inspection, but once it was accomplished there should be no delay in the despatch of our men to Switzerland

FRIDAY, OCT 19TH

Pay in the Royal Army Medical Corps

Mr JOYNSON-HICKS asked the Under Secretary for War what was the pay at home and abroad of a captain in the Territorial Royal Army Medical Corps and a lieutenant in the new Royal Army Medical Corps —Mr MACPHERSON replied The pay and allowances of a captain in the Territorial Force, Royal Army Medical Corps, vary from 19*s* to 22*s* 2*d* a day The pay of a temporary lieutenant engaged on a contract basis is 24*s* a day inclusive The captain is entitled to a larger gratuity on cessation and to other advantages, but the question of the comparative emoluments is under the consideration of the Council

Mr JOYNSON HICKS Is the honourable gentleman aware that there is very grave dissatisfaction in the Territorial Medical Force in regard to this apparent discrepancy?—Mr MACPHERSON did not reply

MONDAY, OCT 22ND

National Insurance Payments

Mr SNOWDEN asked the representative of the National Insurance Commissioners whether he was aware that the panel doctors in many parts of the country, especially in rural districts, had only received from 25 to 50 per cent of the sums due to them for their services for the year 1916, and whether steps would be taken at once to pay up these outstanding arrears and thereby remove a sense of grievance under which these men were suffering —Sir E CORNWALL replied In the great majority of cases the final payments of the doctors have been completed for the year 1916 In those areas where some balance of the year's remuneration is outstanding, the amount can only be small, as the sums which have been advanced monthly or quarterly during the year will have approximated to the total sums which will be found to be due on the final settlement I think, therefore, the honourable Member must have been misinformed but if he will furnish me with particulars of any cases which he has in mind I will cause inquiries to be made

Imports of Opium

Sir WILLIAM COLLINS asked the Parliamentary Secretary to the Board of Trade whether Indian opium was now largely used in this country in place of opium of Turkish or Persian origin for the manufacture of morphia and officinal preparations, and how much opium was used for these purposes in the year 1916 and what were the sources from which it was derived —Mr WARDLE wrote in reply I am informed that for the last 18 months Indian opium has been practically the only description available for morphia manufacture, Persian supplies being relatively insignificant The following statement shows the total net quantity of opium retained for use and manufacture in the United Kingdom in 1913 and 1916, and the countries from which it was originally consigned —

Net Imports of Opium Retained

Consigned originally from —	*1913* lb	*1916* lb
India	4 824	437,237
Persia	35,020	82,362
Turkey	270,123	25 843
Other countries	45,393	15,237

* Exports in excess of imports

TUESDAY, OCT 23RD

Dental Service in the Army

Colonel YATE asked the Under Secretary for War whether the dental service of the Army was in charge of a special director general or of any recognised head of the dental service, what number of dentists were attached to each division, and, if less than one to each division, would he have arrangements made to complete to that strength —Mr MACPHERSON replied The Director General, Army Medical Service, is the recognised chief of the dental officers employed with the Army There are no dentists in the war establishment of divisions, such officers being allotted to duties in the field at the discretion of the general officer commanding in chief and it is not proposed to interfere with the discretion of these officers in this matter

Medical Appliances in Mesopotamia

Mr E WASON (on behalf of Sir J JARDINE) asked the Under Secretary for War whether as regards the troops at all the stations on the Shatt-el Arab, the Tigris, and Euphrates he was in a position to assure the House that sufficient provision had been made for medical and surgical treatment including medicines and appliances, and for the supply of fresh vegetables, and whether and what, provision had been made of fruits —Mr MACPHERSON said in reply The General Officer Commanding in Chief is responsible that sufficient provision is made for the medical and surgical treatment, including medicines and appliances for the troops at all stations in any particular theatre of war, and I have no reason to suppose that provision in Mesopotamia is not merely sufficient but ample in every respect All demands for medical stores are promptly met and in addition to the medical store depots in Mesopotamia a special depôt has been established at Bombay to facilitate supply The supply of fresh vegetables is good and amounts to 67 per cent of the total vegetable ration Fruit and dates are also available locally and issued to the troops

Appointments.

Successful applicants for vacancies Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o clock on the Thursday morning of each week such information for gratuitous publication*

BADGEROW GEORGE W Lieutenant-Colonel C A.M C has been appointed Honorary Consulting Surgeon in Diseases of the Throat and Ear to the South African Military Hospital Richmond Park

DUMMERE, H H M R C S L R.C P Lond., Medical Officer to No 4 District of Bromley

ROBERTS C HUBERT M D, F R C S F R C P Temporary Assistant Physician Accoucheur to St. Bartholomew's Hospital (for duration of the war)

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index)

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor

ASHTON UNDER LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—House Surgeon Salary £250 per annum with board &c

BARNSLEY BECKETT HOSPITAL.—Second Female House Surgeon Salary £225 per annum, with board, &c

BELGIAN CONGO —Two Medical Officers Salary £600 per annum and residence.

BOLTON INFIRMARY AND DISPENSARY —Female Senior House Surgeon Salary £300 per annum with board &c.

BRIDGWATER HOSPITAL.—House Surgeon Salary £140 per annum with board &c

BRIGHTON ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN Dyke road —House Surgeon Salary £200 per annum with board &c

BRISTOL ROYAL INFIRMARY —House Physician and House Surgeon Salary at rate of £120 per annum with board &c

BROMSGROVE WORCESTERSHIRE ASYLUM Barnsley Hall —Temporary Assistant Medical Officer

CHINGFORD WALTHAMSTOW URBAN DISTRICT COUNCIL, HOSPITAL FOR INFECTIOUS DISEASES —Resident Medical Officer Salary £275 per annum with board &c.

DERBY DERBYSHIRE SANATORIUM FOR TUBERCULOSIS Walton Lane near Chesterfield —Resident Assistant Medical Officer Salary £350 per annum with board &c

HAMPSTEAD GENERAL AND NORTH WEST LONDON HOSPITAL, Haverstock Hill N W —Casualty Officer for six months Salary at rate of £150 per annum with board &c

LINDSEY (LINCOLNSHIRE) COUNTY OF THE PARTS OF —Assistant Medical Officer Salary £400 per annum

LONDON FEVER HOSPITAL, Islington N —Resident and Assistant Resident Medical Officers Salaries £300 and £130 per annum respectively with board &c

LONDON TEMPERANCE HOSPITAL, Hampstead road N W —Medical Registrar Salary at rate of 40 guineas per annum

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury near Manchester —Female Resident Medical Officer unmarried Salary at rate of £200 per annum

MANCHESTER EDUCATION COMMITTEE —Assistant School Medical Officer Salary £200 per annum

MANCHESTER MATERNITY AND CHILD-WELFARE CENTRES —Female Medical Officer for Treatment of Children's Diseases Salary £350 per annum

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN Park place Cheetham Hill road.—House Surgeon Salary £150 per annum with board &c.

MANCHESTER ROYAL INFIRMARY —Resident Surgical Officer £225 per annum Assistant Resident Surgical Officer Accident Room House Surgeon and Resident Medical Officer, Central Branch £200 per annum each

MINISTRY OF PENSIONS.—Medical Men to serve on Medical Boards

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road N W —Assistant Resident Medical Officer for four months and Senior Resident Medical Officer for a further four months Salary at rate of £60 per annum and £80 per annum with board &c

ROCHDALE INFIRMARY AND DISPENSARY —Senior House Surgeon and Second House Surgeon. Salaries £400 and £200 per annum respectively with board &c.

ROTHERHAM HOSPITAL.—Junior House Surgeon Salary £150 with board &c.

ROYAL FLYING CORPS HOSPITAL, 37 Bryanston square, W and 82, Eaton-square S W —Resident Medical Officer for Convalescent Home for Officers of Royal Flying Corps Salary £500 per annum with board &c.

ROYAL LONDON OPHTHALMIC HOSPITAL (MOORFIELDS EYE HOSPITAL) City road, E C —Third House Surgeon. Salary at rate of £50 per annum with board, &c.

SALISBURY GENERAL INFIRMARY —House Surgeon Salary £150 per annum with board &c

SHEFFIELD CITY HOSPITALS FOR INFECTIOUS DISEASES —Assistant Resident Medical Officer at Lodge Moor Hospital

SHEFFIELD ROYAL INFIRMARY —House Physician. Salary £120 per annum, with board &c.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon Salary £100 per annum with board &c.

WALSALL AND DISTRICT HOSPITAL.—Female Assistant House Surgeon and Anæsthetist. Salary £175 per annum with board &c.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY —House Surgeon Salary £200 per annum with board, &c

THE Chief Inspector of Factories Home Office London S W gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Lytham in Lancashire

Births, Marriages, and Deaths.

BIRTHS

MACKENZIE.—On Sept. 15th at Great Chart near Ashford Kent the wife of Captain (Temporary Lieutenant Colonel) D F Mackenzie R.A.M C of a daughter

MESSITER.—On Oct 16th at Cappoly Dudley Worcs Rona, the wife of Captain C C Messiter R.A.M C of a daughter

ROSS.—On Oct. 17th, at Coram Towers Lyme Regis the wife of Athole Ross, M D., M R C P of a daughter

SCOTT —On Oct 16th at Lancaster place S W the wife of Captain E. Scott D S O R.A.M.C a son

MARRIAGES

DAVIES—AKED —On Oct 20th at St Peter's, Harrogate, Arthur Davies Captain R.A.M C to Erica Violet, eldest daughter of Mr and Mrs H E Aked Highgreen Harrogate.

LANE—CLARK.—On Oct 16th at St Augustine's Stepney East Captain Harold D Lane M C., R A M C (T F) to Nellie Mary Louise daughter of Lieutenant Colonel Clark, D S O A O D

LIVESEY—LIVESEY —On Oct 18th, at S Mary Buckland Surgeon Major E W Livesey R A.A and E of Alderney Channel Islands, to Hilda Frances third daughter of the late Frank Livesey M Inst C.E and Mrs Livesey of Buckland Corner Reigate.

ORD—ZIANI DE FERRANTI —On Oct 20th at the Church of the Holy Name Manchester William Erling Ord, M D R A.M C to Vera Catherine Gertrude, second daughter of Dr and Mrs Ziani de Ferranti of Hollinwood and The Hall, Baslow Derbyshire

DEATHS

DAVIES —On Oct 17th killed in action Captain Frederick Charles Davies R.A M C M R C.P M B B C M R C S aged 33

GIBSON —On Oct. 17th of wounds, Captain (Temporary Lieutenant Colonel) Harold Gibson R A.M C aged 33

HILL—On Oct. 11th killed in action Lieutenant R Gordon Hill R A M C M C Coldstream Guards

NICHOLSON —On Oct 15th Tom M Nicholson M.A Oxon M R C S L.R C P Lond, after great suffering heroically borne

SAYRES —On Oct 10th of wounds received July 17th Alexander Ward Fortescue Sayres Lieutenant Colonel R A.M.C (T F) of Fern Bank Hartley Plymouth

SIMPSON —On Oct 1[illegible]th at Southgate-road, N after a few days illness Dr C Stanley Simpson

STERLING —On Oct 16th at a nursing home Captain Robert Sterling M A M B B S., R.A.M C., hon Canon of St George's Collegiate Church Jerusalem for 24 years a missionary of the C M S Gaza, Palestine aged [illegible]

N —*A fee of* [illegible] *is charged for the insertion of Notices of Births Marriages and Deaths*

The following journals, magazines &c. have been received —Canadian Medical Association Journal, Therapeutic Gazette British Journal of Dental Science Philippine Journal of Science Bulletin de [illegible] Higher [illegible] St Paul Medical Journal [illegible] Medical Officer Boletin del Hospital del Salvador Santiago [illegible] and Child Welfare Journal of Compar[illegible] [illegible] Johns Hopkins Hospital [illegible]

Medical Diary for the ensuing Week.

SOCIETIES

ROYAL SOCIETY, Burlington House London W

THURSDAY —Lord Rayleigh O M. On the Reflexion of Light from a Regularly Stratified Medium.—Sir William Abney K.C B Two Cases of Congenital Night blindness.—Hon R J Strutt Duration of Luminosity of Electric Discharge in Gases and Vapours: Further Studies —Mr G W Walker Surface Reflexion of Earthquake Waves.—Dr H. S Allen: Characteristic Frequency and Atomic Number (communicated by Prof O W Richardson)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W

MEETINGS OF SECTIONS

Friday Nov 2nd.

LARYNGOLOGY (Hon. Secretaries—W D Harmer Frank A. Rose) at 4 P M

Presidential Address

Cases

ANÆSTHETICS (Hon. Secretaries—F E Shipway, Ashley S Daly) at 8.30 P M

Paper

Lieut Col J F Silk R.A.M C The Administration of Anæsthetics in Home Military Hospitals

Demonstration

Dr Hugh R. Phillips: Apparatus for Administering Chloroform and Ether with Oxygen.

MEDICAL SOCIETY OF LONDON 11 Chandos-st Cavendish sq, W

MONDAY —8 30 P M Paper Capt H. E Boyle R A.M C (T) Experiences in the Use of Nitrous Oxide and Oxygen with Regulated Re-breathing in Military Surgery at the First London General Hospital

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

POST GRADUATE COLLEGE West London Hospital Hammersmith road W

MONDAY —2 P.M., Medical and Surgical Clinics. X Rays. Mr Gray: Operations Mr B Harman: Diseases of the Eye Dr Simson: Diseases of Women.

TUESDAY —2 P.M. Medical and Surgical Clinics X Rays Mr Baldwin: Operations Dr Banks Davis Diseases of the Throat, Nose, and Ear Dr Pernet: Diseases of the Skin.

WEDNESDAY —10 A.M Dr Arthur Saunders Diseases of Children. Dr Banks Davis: Operations of the Throat, Nose, and Ear 2 P.M. Medical and Surgical Clinics. X Rays. Mr Pardoe: Operations

THURSDAY —2 P.M Medical and Surgical Clinics X Rays Mr Gray: Operations Mr B Harman: Diseases of the Eye.

FRIDAY —10 A.M. Dr Simson: Gynæcological Operations. 2 P M. Medical and Surgical Clinics. X Rays Mr Baldwin: Operations. Dr Banks Davis: Diseases of the Throat, Nose and Ear Dr Pernet: Diseases of the Skin.

SATURDAY —10 A.M. Dr Arthur Saunders: Diseases of Children Dr Banks Davis: Operations of the Throat, Nose and Ear Mr B Harman Eye Operations. 2 P M. Medical and Surgical Clinics X Rays. Mr Pardoe: Operations

METEOROLOGICAL READINGS

(*Taken daily at 8.30 a.m. by Steward's Instruments*)

THE LANCET Office Oct 24th 1917

Date	Rain fall	Solar Radio in Vacuo	Maximum Temp Shade	Min Temp	Wet Bulb	Dry Bulb	Remarks
Oct 18		81	55	35	42	43	Fine
19	0 15	79	53	40	43	44	Cloudy
20		74	55	40	43	44	Fine
21		65	68	43	45	48	Fine
22		90	59	47	47	47	Fine
23	0·07	92	54	46	48	50	Cloudy
24		62	49	38	38	40	Fine

Other information which we have been accustomed to give in these Readings" is withheld for the period of the war

EDITORIAL NOTICES

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice

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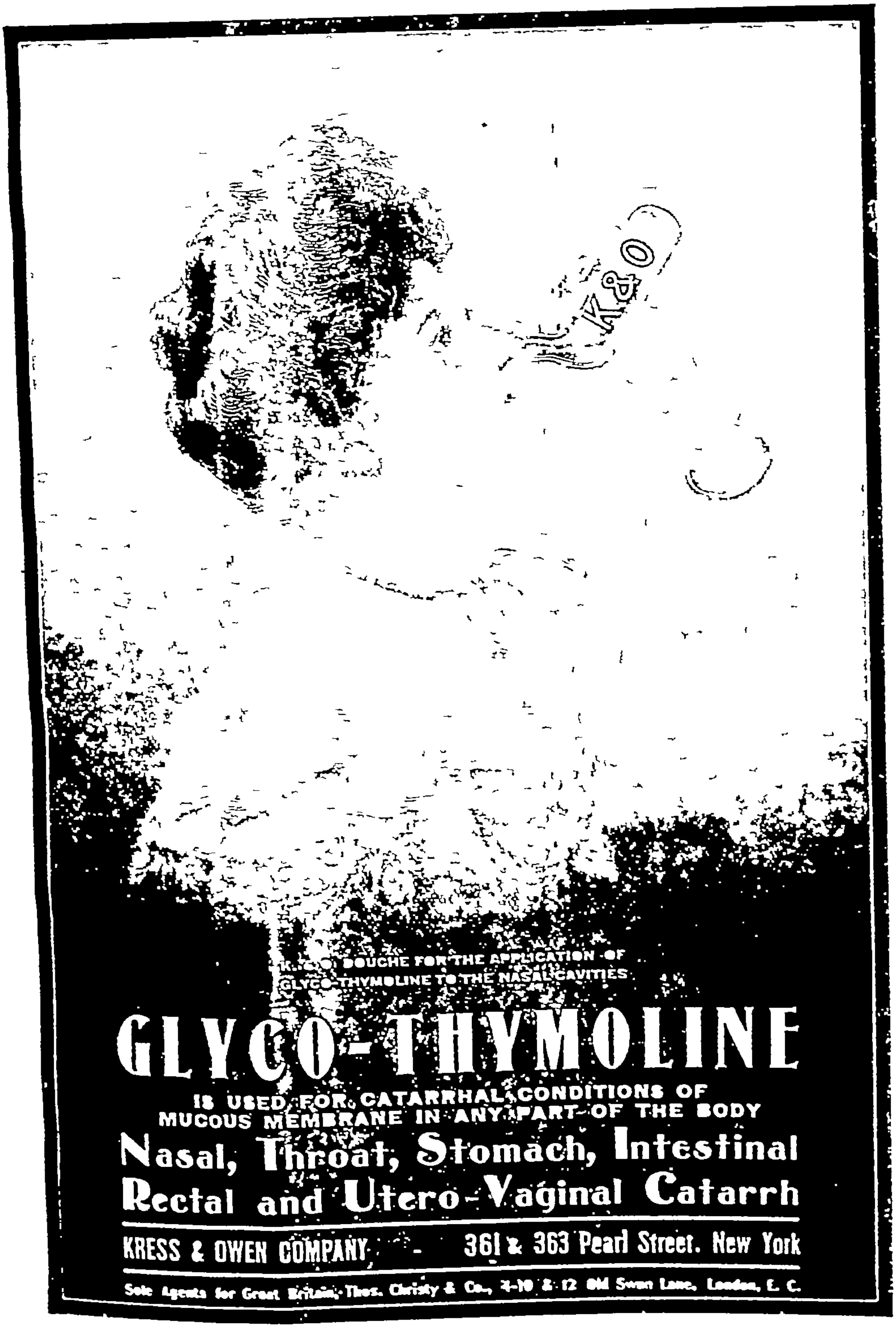

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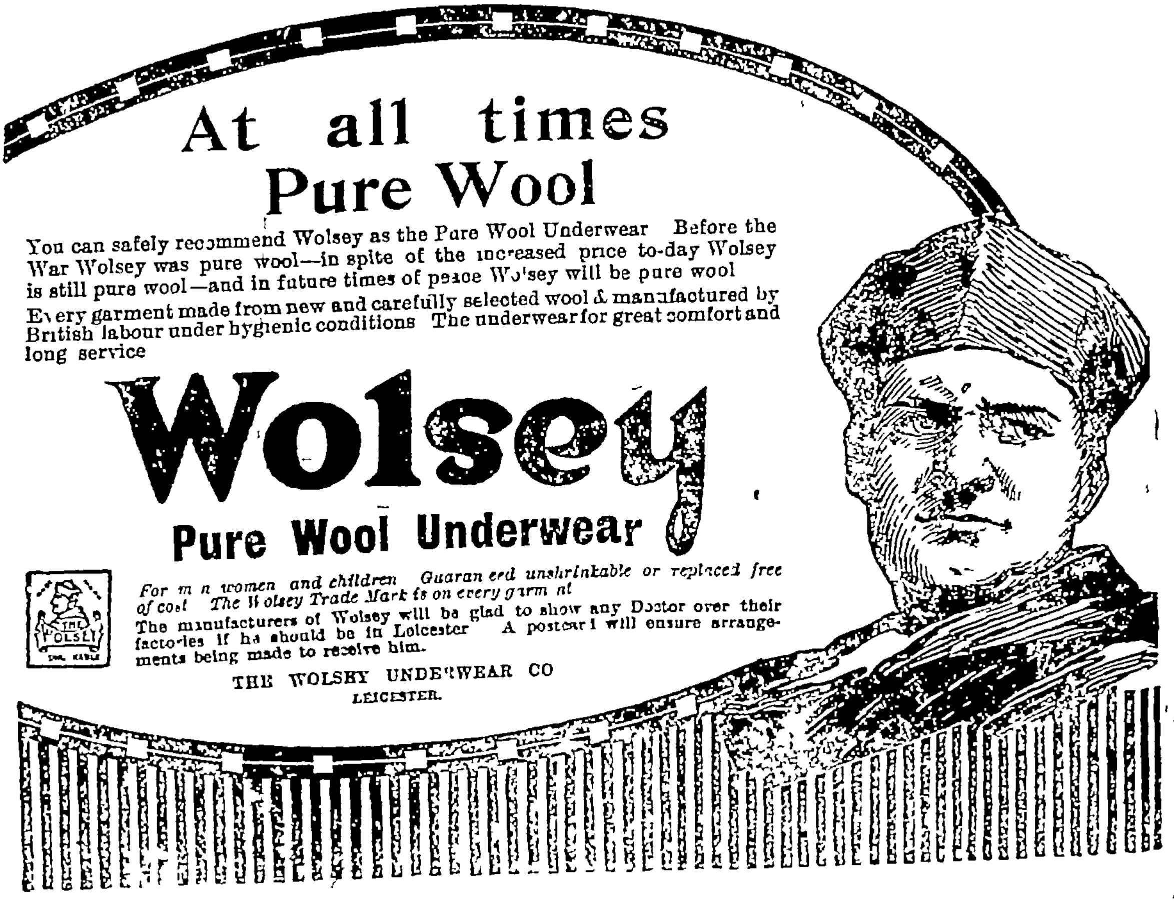

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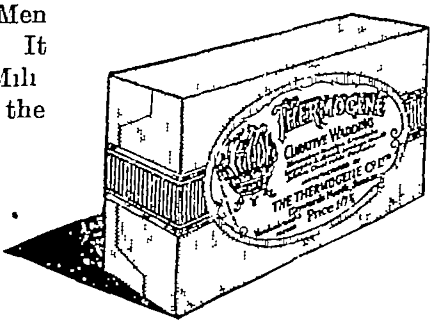

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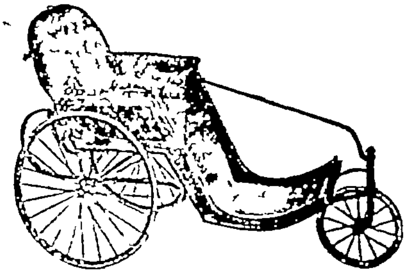

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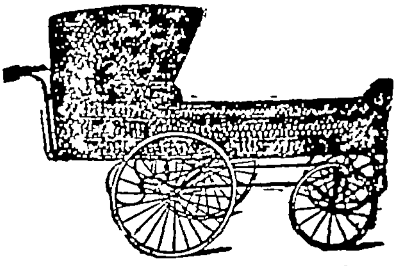

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